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Original Articles

Algid Malaria

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In this short paper I have made no attempt to enter the maelstrom of controversy that swirls and eddies about malaria, nor have I tried to tunnel through the mountains of literature on the subject. I offer merely a few suggestions regarding diagnosis and the method we have found most efficacious in the treatment of the particular type of the disease known as *algid malaria*.

Upon looking over several books on tropical diseases, I was astonished at the vague and scanty statements regarding the symptoms and the treatment of algid malaria, considering the general seriousness of this condition and its high mortality.

It has been my experience in Spanish Honduras and in Guatemala, during the last four years, that algid malaria is by no means uncommon, and that the patient's life depends on the early (practically immediate) diagnosis, and the promptness with which treatment is begun. Of course, in many instances, we are unable to save the patient; but we can at least reduce, to a considerable extent, the percentage mortality.

The cases to which particular reference is made in this paper are those types of collapse which are not infrequently seen in the hospitals here. The patients present a picture almost similar to that of acute shock, so frequently seen in severe trauma, and, happily less often, in surgery.

Such patients are unable to stand, much less to walk, and they are cold and frequently covered with "clammy" perspiration, pulse is very rapid, thready, and at times not palpable at the wrist. They may or may not complain of abdominal pain; the blood-pressure is markedly decreased; there is great effort involved in talking; the history is given fairly coherently, as a rule. If an arm or a leg is raised by the examiner, it will fall back to the bed, without the patient making any voluntary effort to keep the limb in an elevated position. The eyes appear sunken, and the expression anxious, although the patient does not seem worried about his condition, submitting to examination with complete indifference. Almost always a sharp exclamation of pain is elicited by deep pressure over the splenic area. There may be considerable rigidity of the abdominal wall, although this is not the rule. If there is vomiting, the fluid is bile-stained in the great majority of cases, and rarely contains appreciable quantities of blood. Diarrhea is sometimes present, the stools being rather watery in character, occasionally containing blood. The skin is pale, a symptom in sharp contrast to the color of the skin in some of the other forms of malaria more chronic in character. In rare instances acute jaundice is present. There is no desire for food, and very little for water. As a rule the restlessness is not marked; but if cerebral complications ensue, there is a continuous restlessness with a muttering delirium or an absolutely profound coma.

In two cases which came under my observation there were constant repetitions of the same phrase, uttered with extreme rapidity, each word being spoken clearly and distinctly and much more rapidly than I could say it even when I tried to repeat

it synchronously with the patient. It may be worthy of note that both of these cases ended fatally.

The temperature by mouth is generally subnormal, ranging from about 96° to 99°. The cases showing 99° or over, in our experience, have a much better prognosis than the subnormal types. Mere observation gives one the impression of an extremely ill patient, and any one who has seen these cases will always retain a vivid picture of the utter prostration of the algid type of malaria. There is generally a history of fever, or chills and fever, for several days preceding the decision of the patient to seek medical attention.

In the cases reported here *Plasmodium falciparum* was found in the greatest number, although one case showed a mixed infection of *P. falciparum* and *P. vivax*.

White-blood counts show no specific change in any type of cell, the total and the differential being about average. A large series of counts was not attempted, as the first few showed no interesting changes. There is a variable decrease in the erythrocytes, which can be accounted for by the anemia present in these patients who have chronic malaria and intestinal parasites.

If a patient from a malarial district presents himself for treatment with a low or subnormal temperature, profound prostration, cold, clammy skin, anxious expression with eyes sunken, nose sharp and "pinched," with or without abdominal pain and rigidity, and with no evidence of severe trauma nor acute intra-abdominal disease, the attendant should not wait for a positive blood, but at once make at least a tentative diagnosis of algid malaria and begin treatment. If all medication is withheld until a positive blood is reported, the parasites will probably be found only at autopsy if at all.

The method of treatment employed in Honduras is about the same as used here in Guatemala. I am fully convinced of the absolute necessity for intramuscular injections of quinine in certain cases of malaria; the algid type being a most excellent example. There is nothing new or startling in the following method used; it is merely a definite routine which I have not hitherto seen in print:

In all United Fruit company hospitals, we of necessity must standardize certain routine treatments, so far as possible, to cope with the large number of patients admitted for the same disease.

When admitted to the hospital, the patient suffering from algid malaria is given a hot sponge-bath in bed, and is immediately covered with blankets and surrounded with hot-water bottles. While the ward attendant is preparing the patient, the nurse is preparing two syringes—one for a hypodermic injection of 1/30 grain of strychnine sulphate, and one for an intramuscular injection of 15 grains of quinine; both of which are immediately administered.

An order is then written for an intramuscular injection of 7½ grains of quinine every six hours, and subcutaneous injection of 1/60 grain of strychnine sulphate every three or four hours. For an additional stimulant I have found subcutaneous injections of camphor in oil, 3 or 5 grains, to be more efficacious than special cardiac tablets or preparations of digitalis.

Every patient is urged to take fluids freely, especially water. If there is difficulty in retaining water taken by mouth, a liter of normal saline solution is given by hypodermoclysis, generally over the pectoral muscles.

The hot-water bottles and blankets are used until the patient is warm, which generally occurs in a few hours. Profuse sweating should never be produced, as the patient badly needs fluids, and if the kidneys are functioning properly they will take care of elimination. ***A purge is never given at this stage.***

Quinine injections are continued until the patient is able to retain easily the liquid or tablets taken by mouth. He is then given 30 or 40 grains daily until he is discharged from the hospital.

We do not give the injections in heavy doses, since from experience we know that if a large amount of quinine is administered at this critical stage, in all probability the patient will not survive. Whether destruction of parasites produces toxic substances

that act on an already weakened cardiac muscle, or whether the heart feels the effect of the quinine *per se*, I make no attempt to explain, but clinically it is evident that if a large quantity of quinine is given, the heart becomes progressively weaker and the patient generally succumbs. When smaller doses are given, at six-hour intervals, the result is not disastrous.

There is no space in this short paper for a discussion of the relative merits of the different methods of quinine administration, but it may be said that if this drug is given by mouth to these patients the majority die.

The strychnine is administered until the pulse rate is well below 100 and the volume is greatly improved. Tincture of digitalis is then given in 15-minim doses, three times daily, until the volume and the rate approach normal. The injections of camphor in oil are used symptomatically, entirely according to the judgment of the doctor in charge. It is, of course, evident that the most careful nursing is absolutely essential.

As soon as the patient assumes the aspect of the average malarial case (usually within from three to five days), he is generally given a purge of 3 or 4 grains of calomel, followed by a saline; then he is allowed a light diet. Upon leaving the hospital he is instructed to take 30 or 40 grains of quinine daily for several weeks, along with a tonic containing iron and arsenic. Of course, tropical workers are aware that the average "mozo" will take the quinine for about two or three days and then either throw the rest away or save it for the next attack of fever.

As previously stated this method is by no means a panacea for cases of algid malaria, but it is a definite routine that we have used repeatedly with success, and up to the present time it is the best we have found. We use the sterile ampoules of dihydrochloride of quinine containing from 7½ grains in about 1½ cc of solution. If reasonable care be taken in the technique of administration, the danger of the formation of abscesses can be practically disregarded.

The patients who eventually succumb soon lapse into a subconscious or comatose condition; the pulse becomes weaker and more rapid, respiration slow and "sighing," and the skin cold and clammy. The heart will not respond to adrenalin, even though it be injected intramurally or directly into the auricle or ventricle. Death occurs with the patient in a comatose state.

It must be borne in mind that we in the lowlands of the tropics are dealing with a people who, in the majority of instances, have had intermittent malaria for many years, intestinal parasites in profusion practically since birth, and in a great number of cases congenital or acquired syphilis. These complicating conditions certainly render the treatment of an acute illness more difficult than it would be if we were dealing with an individual possessing a fairly strong physique.

In the following charts, selected at random from the series of cases reported, the average case of algid type of malaria is illustrated. Short histories of five cases are given, which in each instance shows the duration of the disease before the patient presented himself for treatment. The physical examinations are curtailed, only the main points being presented to show the close similarity in the findings.

Case 1.—M. P., hospital Case No. 818.

History: Chills and fever daily, for six days. Claims to have had about twenty bloody stools yesterday after taking Epsom salts. Pain over liver and splenic areas.

Examination: No pathological condition found in the lungs. Heart, enlarged slightly downward and to the left; intermittent fibrillation, sounds best heard at mitral and tricuspid areas. Spleen, very painful on pressure, enlarged downward, lateral type. Liver, area painful on pressure, organ not palpable. Extremities negative.

Patient shows profound prostration.

Tentative diagnosis: Algid malaria.

Remarks: Patient had no diarrhea in hospital; no blood found in stools; ascaris and trichocephalus ova present. Urine, negative. Blood, *Plasmodium falciparum*.

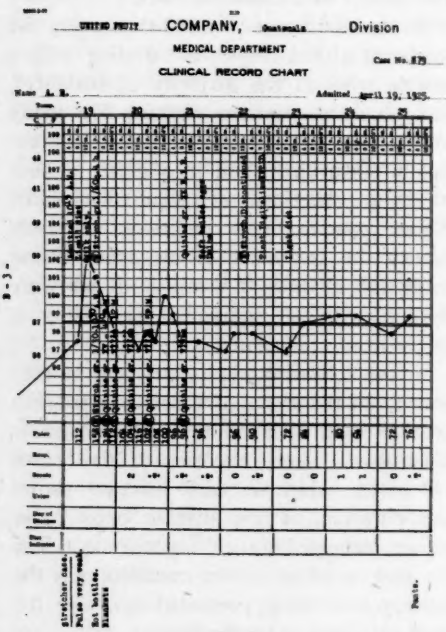
Convalescence a bit stormy, but steady improvement.

Number of days in hospital: Thirteen.

Case 2.—A. R., hospital Case No. 879.

History: Five days ago had high fever, with chills. Vomited bile-stained fluid. Then followed a severe, watery diarrhea. Passed no blood.

Examination: Skin, cold and clammy;



great prostration; no pathological condition found in chest. Neither spleen nor liver palpable, nor are areas tender on pressure. Pulse weak and rapid.

Diagnosis: Algid malaria.

Remarks: No diarrhea while in hospital. No blood in stools; anchylostoma and trichocephalus ova present. Urine, negative. Blood, *Plasmodium vivax* and *Plasmodium falciparum* (mixed inf.).

Convalescence uninterrupted.

Number of days in hospital: Eight.

Case 3.—S. A., hospital Case No. 950.

History: Had slight fever. Tried to walk, and fell on railway track. Memory not clear.

Examination: Patient very weak. No contusions found. Skin, cold and clammy. Pulse, barely perceptible. Intense soreness over abdomen. Heart-sounds very faint, rate and rhythm regular. No pathological condition found in lungs. Splenic and liver areas intensely painful on pressure. Abdomen, rigid. General condition, very poor.

Tentative diagnosis: Severe algid malaria.

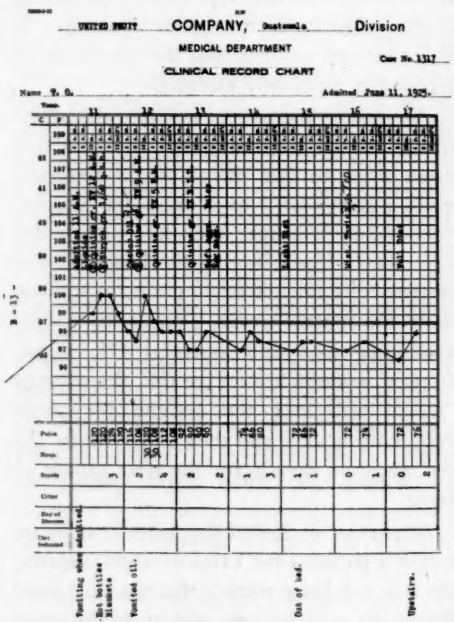
Remarks: No diarrhea; no blood in stools; ascaris, anchylostoma and trichocephalus ova present. Urine, negative. Blood, *Plasmodium falciparum*. Patient extremely ill for about sixty hours; after that, convalescence uninterrupted.

Number of days in hospital: Eleven.

Case 4.—Hospital Case No. 1151.

History: Fever and jaundice for four days. No chills. Vomiting green fluid.

Examination: Mental condition slightly confused. Marked prostration. Skin, cold—intensely jaundiced, scleræ golden-yellow. No abnormal condition found in lungs. Heart, hemic systolic murmurs at all valve areas. Pulse weak. Liver nor



spleen palpable, but both areas exquisitely painful on pressure.

Diagnosis: Algid malaria.

Remarks: No blood in stools; anchylostoma, ascaris and trichocephalus ova present. Urine, bile, albumin present—heavy sediment of calcium oxalate crystals. Blood, *Plasmodium falciparum*.

This patient made a slow but uneventful recovery. I believe the acute malarial hepatitis was largely responsible for the slowness of his recovery. He was weak and in very poor physical condition for a considerable length of time.

Number of days in hospital: Thirty-one.

Case 5.—Hospital Case No. 1317.

History: Fever daily, without chills, for three days.

Examination: Expression anxious, mental condition good. Skin, cold, not clammy. Prostration not very severe. No abnormal condition found in lungs. Heart, rapid but no arrhythmia; no murmurs. Spleen, about 2½ inches below costal border, painful on pressure. Liver, not palpable, but pain on pressure elicited at costal margin. No abdominal pain nor rigidity.

Diagnosis: Algid malaria.

Remarks: Stools, pus and blood present; trichocephalus ova also present. Urine, albumin and pus present. Blood, *Plasmodium falciparum.* The patient showed gastrointestinal symptoms which rapidly responded to quinine. Although the pulse was weak and rapid, this case represents the milder type.

Recovery uneventful.

Number of days in hospital: Eleven.

In cases showing diarrhea, castor oil is given instead of the calomel, and salts administered in the regular routine.

As above stated, I have made no attempt here to discuss physiology, pathology, or pharmacology. I have merely tried to offer a few suggestions based upon what we have found helpful in the diagnosis and treatment of algid malaria.

SUMMARY.

For the sake of clearness and forcefulness, let me briefly sum up the findings included in this paper:

1. Algid malaria is not an infrequent condition in the Central American tropics.

2. It is one of the most serious phases of malaria.

3. Early diagnosis and prompt treatment, irrespective of a positive blood, are absolutely imperative.

4. A majority of the cases respond to heat, fluids, and intramuscular injections of quinine and strychnine.

In conclusion I wish to express my thanks and appreciation to Dr. N. P. Macphail, Superintendent of Quirigua Hospital, for his valuable suggestions regarding treatment. My thanks are also due to Dr. F. Weiss, Bacteriologist, and Senor Gallegos, Technician—both members of the Quirigua staff—for their kindness in doing the laboratory work.

The Ear in General Practice

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It is not to be expected of the physician engaged in general practice that he shall be at the same time a specialist in the diagnosis and treatment of the diseases of any one organ of the body, whether it be the heart, kidneys, stomach, eye, or ear.

The man who is busy through all hours of the day and night answering calls to see patients sick with a variety of ailments—indigestion, pneumonia, typhoid fever, leg ulcers, broken bones, mumps, childbirth, diphtheria, diabetes, scarlet fever, measles, or eczema—must devote the little time he has left for study to all of these conditions and many more besides. His sphere of usefulness is wide, however, for he is supposed to have some knowledge at least concerning every ailment to which human flesh is heir. He is most often the first to be consulted in case of illness, regardless of its cause or the region affected. Upon the exercise of his knowledge, skill, and judgment may depend the future health, comfort, and possibly the life of his patient.

Going back to our subject, what is the family physician supposed to know about the ear? During the course of clinical demonstration of ear diseases before the senior students in Jefferson Medical College, each member of the class is given a printed slip having for its title: "Some Things Every Medical Man Should Know About the Ear." Then follow these fourteen suggestions:

1. How to examine the ear.
2. The general appearance of the normal external auditory canal and the ear-drum (membrana tympani).
3. How to cleanse the external auditory canal.
4. How to recognize and remove impacted cerumen.
5. What to do when foreign bodies (animate and inanimate) are found in the external auditory canal.
6. By what signs and symptoms one recognizes middle-ear inflammation.
7. The abortive measures which may be employed in the early stages of middle-ear inflammation.
8. When the ear-drum should be incised.
9. In what general diseases to watch for ear complications.
10. The function of the Eustachian tube.
11. How and for what purpose the Politzer bag is used.
12. How to diagnose acute mastoiditis.
13. How to distinguish between swelling in the external auditory canal due to the presence of a furuncle and that due to acute mastoid inflammation.
14. The intracranial conditions (brain abscess, sinus thrombosis, and meningitis) complicating middle-ear or mastoid disease.

These fourteen points are not intended to cover all the ear conditions which will be met in general practice, but it is believed that if the physician is familiar with the knowledge implied in these suggestions, he will have a good practical working basis to guide him in the care of cases coming to his attention.

Time permits of the discussion of but a few of these points.

How to examine the ear:

The essential thing is good illumination of the external auditory canal and the membrana tympani. The usual and least expensive equipment consists of the ordinary aural speculum through which light is reflected from a head mirror. The light may be reflected from a lamp, electric light, Welsbach gaslight, or even a strong flashlight. Whatever the source, the light should be placed either to the right or left and on a plane slightly back of the ear to be examined. The auricle is drawn backward and upward to straighten the canal while the speculum is gently inserted. Should hairs in the canal tend to extend across the end of the speculum, they may be made to disappear by giving a slight rotary movement to the speculum as it is being introduced. If now the light is directed straight through the speculum and rays focused on the drumhead, a clear and satisfactory view is obtained.

Personally, I much prefer using some form of electric lighted otoscope. Some of the advantages over the method of examination just described are: more perfect illumination, an absolutely clear and definite picture of the canal and drum membrane, convenience, and the fact they are so constructed that certain treatment and operative measures may be carried out under this perfect, direct illumination. Another advantage in using this instrument is that it is easily carried about and is especially convenient when you want to examine a bed patient who is too ill to be moved. The ear may be satisfactorily examined without even turning the head on the pillow.

The general appearance of the normal external auditory canal and the ear-drum:

From the clinical standpoint it is absolutely essential that one be able to recognize the normal canal and drum in order that he may know when the picture he sees is abnormal.

On inspection, the canal wall just within the meatus may or may not present a thin coating of cerumen. The canal often curves slightly forward as it approaches the drum,

and the angle thus created renders a view of the anterior margin of the drum difficult if not impossible in some cases.

Of the landmarks usually seen on the normal drum, the so-called cone of light is perhaps the one most readily found. It is seen in the lower anterior portion of the drum. Its upper end points toward the umbo, or that portion of drum surrounding the lower extremity of the long process of the malleus. This occupies approximately the center of the ear-drum. Extending upward and forward from this point the long process or handle of the malleus may be seen as a ridge which ends abruptly at its upper end in a small whitish prominence or knob—the short process of the malleus. Above this point and curving slightly forward and backward to the canal wall may be seen Shrapnell's membrane, which is slightly pinkish in color in contrast to the glistening pearly-gray surface of all the lower portion of the drum.

How to cleanse the external auditory canal:

In this suggestion we shall consider the canal which is more or less filled with pus, epithelial cells, or scales, or a mixture of all these, but not impacted cerumen. It is the condition of the canal found most commonly in cases of acute or chronic suppurative otitis media.

Unless this mass of pus and débris be completely removed from the canal and the surface of the drum membrane, one can gain no satisfactory idea of the actual condition present: whether there be single or multiple perforation; whether or not the existing perforation is providing sufficient drainage; whether there be granulation tissue in the margin of the drum perforation, or on the inner wall of the tympanic cavity; or whether there be polypoid masses of tissue growing from the canal wall or extending from the middle ear out through a perforation of the drum.

We believe this cleansing of the canal is best accomplished by means of the cotton-wound applicator combined with suction gently applied. In the case of children particularly is the use of suction desirable as a means of removing a large collection of pus from the canal. A small cannula, connected with any kind of suction apparatus, is simply inserted into the pus mass and in an instant the pus is removed. This is much easier on the child than to attempt to wipe the canal dry by the use of perhaps a dozen cotton mops and having a hard struggle to hold the child each time the cotton is introduced. After removing the free pus in the manner indicated, it may be found that certain portions of the drum and canal wall are concealed by bits of cheesy appearing material consisting of pus, epithelial cells, with perhaps some cerumen. These masses should be and can be removed by means of the cotton-wound applicator. In using the cotton-wound applicator, the mistake is often made of trying to use the wooden applicators offered in the market, or a metal applicator that is equally cumbersome and straight, on either of which too large a piece of cotton is wound. Using a mass of cotton that fills the canal as it is inserted only tends to push all pus and débris further down toward the ear-drum. The best form of applicators are the very small copper or steel applicators which are to be found in any surgical supply house. The cotton brush attached to one of these applicators must be small enough so that it can be inserted freely to the bottom of the canal, and then in withdrawing it with a slight twisting movement and pressure against the canal wall, the mesh of cotton engages the foreign substance and it is removed.

This may have to be repeated a number of times before the entire surface of canal and drum is visible. In some ears, owing to irregularities in the canal wall, it will be found necessary to bend the applicator near the end in order that the entire circumference may be reached. Not only is this thorough cleansing necessary in order to make a satisfactory examination of the ear, but it must be done often and persistently as the essential preliminary of all local treatment.

I have dwelt at some length on this matter of examining ears for the reason that I have heard so many practitioners say, "I seldom try to look in an ear because I don't know what I see when I do." I believe that in most cases their difficulty has arisen from poor illumination of the ear and carelessness or indifference in the matter of cleansing the canal.

Three other of the above suggestions will be considered together:

By what signs and symptoms one recognizes acute middle-ear inflammation.

The abortive measures which may be employed in the early stages of middle-ear inflamation; and,

When the ear-drum should be incised.

In nearly all cases of acute middle-ear inflamation the first and most annoying symptom is pain. This may begin as a dull "earache" and gradually increase in severity, or it may appear with marked suddenness and severity. There is apt to be a sense of fulness in the ear, with tinnitus aurium and some impairment of hearing. A moderate rise of temperature is usually noted, particularly in children. It is in this earliest stage that every case should have medical attention. Too often, however, the adult sufferer, or the parents in case of an afflicted child, will resort to the home treatment best known to them, namely, the instillation of a few drops of sweet oil or the application of a hot-water bag. Sometimes these measures give relief, but it is often only very temporary. The family doctor cannot be blamed if he is not called before graver conditions have developed, but he can do no greater service to his patients than to warn them of the danger which may arise from indifference and procrastination in acute ear disturbances.

If abortive measures are to be successful in acute middle-ear inflammation, they must be applied early, within forty-eight hours of onset, and the earlier the better.

The patient should be put to bed, if not already there, and the intestinal tract cleared.

If on examination the ear-drum is found to be partially or even entirely reddened, but without any bulging or obliteration of landmarks, we may hope to abort the formation of a middle-ear abscess by applying to the ear-drum a cotton tampon saturated with a solution consisting of 10-per-cent phenol in glycerin. This may be left in the ear for a period of ten to twelve hours, when it should be removed and the ear inspected. If the general appearance of the drum, combined with amelioration of the symptoms, suggests improvement or at least that the condition is no worse, the phenol-glycerin application may be continued as long as thought advisable or until the middle-ear condition has been entirely relieved.

As to the indication for incision of the ear-drum, the one sign which should never be ignored is distinct bulging of the drum, indicating the presence of a collection of fluid within the tympanic cavity. In cases occurring during the course of certain infectious fevers, as, for example, scarlet fever and measles, it is not considered advisable to await bulging before incision if there be general redness of the drum. In other cases, those resulting from acute "head colds," tonsillitis, sea bathing, or in those cases occurring without any apparent cause, we would not ordinarily open the ear-drum until bulging appeared. This incision is made as the quickest and at the same time most certain means of providing drainage from the middle ear and thereby greatly diminishing the possibility of the development of grave complications. If one would seek to avoid mastoiditis, lateral sinus thrombosis, meningitis, or brain abscess of otitic origin, he will do well to practice early incision followed by frequent and thorough after-treatment until the middle-ear suppuration has entirely subsided and the drum incision healed.

How to distinguish between swelling in the external auditory canal due to the presence of a furuncle and that due to acute mastoid inflammation:

Furuncles occur in the outer portion of the external auditory canal, hence the swelling is usually visible without a speculum

since the mouth of the canal is partially or completely closed by the swelling.

The swelling resulting from acute mastoid involvement is noted in the deeper or bony portion of the canal. The swelling is usually more pronounced on the posterior-superior wall of the canal. The membrana tympani, if compared with that of the opposite side, will appear to be diminished in area.

Pressure at successive points around the mouth of the canal will be most painful directly over the site of the furuncle, whether it be on the anterior wall or elsewhere. Mastoid tenderness is elicited only by direct pressure against the mastoid process, the points of special tenderness being over the tip, over the mastoid antrum, and over the opening for the emissary vein.

Furuncles frequently occur without the presence of middle-ear inflammation. Mastoid disease is nearly always secondary to a suppurative middle ear. The treatment of a furuncle is simple incision and drainage, performed preferably under general anesthesia. The condition is entirely relieved within a few days, but the patient should be warned of the possibility of early recurrence as furuncles tend to appear in crops.

If, in spite of early and free drainage with proper after-care in the acute middle-ear condition, pain and tenderness appear in the mastoid region accompanied by a rise in temperature and a moderate leucocytosis, one is led to suspect the beginning of mastoid involvement. If this change is recognized sufficiently early, abortive measures are in order—rest in bed, purgation, and irrigations of the ear at intervals of two hours, employing for this purpose a quart of hot normal salt solution. It is necessary to inspect the ear at least every twelve hours, if not oftener, during this expectant treatment. If the opening in the ear-drum appears too small for adequate drainage, it should be enlarged. The canal wall is watched closely for the appearance of swelling. As a rule, so long as this swelling does not appear, the hot irrigations may be continued as long as necessary. But when definite swelling in the posterior-superior aspect of the canal is noted, it may be taken as a safe indication for opening the mastoid.

It must always be borne in mind that mastoid disease is often atypical as to signs and symptoms. One of the worst cases on which I have operated had, at no time, any distinctive signs of mastoid disease.

The final suggestion in our list is that one pertaining to *the intracranial conditions (brain abscess, sinus thrombosis,* and *meningitis) complicating middle-ear or mastoid disease.*

To adequately discuss these conditions would require more time than can be given the subject on this occasion.

Every one recognizes these as serious complications—conditions calling for heroic surgical measures—conditions rapidly assuming the aspect of a race against death with the surgeon and patient frequently the losers.

But the thought which I would drive home in this connection is just this: if you who are doing general practice will teach your patients the importance of consulting you at the very onset of ear disturbance, and if you will promptly and efficiently meet the indications in the condition presented, you and your patients are likely to have but little cause to worry about these grave complications. It must be remembered that all these things do not occur at once—there is a fairly uniform order of progression of these infective processes. In the beginning we have an infective agent in the postnasal space. It passes by way of the Eustachian tube to the middle ear. A middle-ear abscess results. This condition is treated. If not relieved at this point the infection may extend to the mastoid. If suppuration develops we open the mastoid. Again, the infection is arrested or goes on to attack the lateral sinus or to cause other intracranial complications. It is evident that the farther the infection extends from its original location, the more serious the condition of the patient becomes.

Gum versus Gargles in Post-Tonsillectomy Treatment

BY WILLIAM H. SPENCER, M.D.

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The customary home treatment prescribed following tonsillectomy consists in the use of a gargle of either warm normal salt solution, some of the pleasantly flavored proprietary antiseptic washes, weak solutions of peroxide of hydrogen, potassium permanganate, or the like. The diet is often left to the discretion of the patient, with perhaps instruction that it be soft in nature. Some surgeons still advise liquids throughout the healing period, fearing that solid food will cause secondary hemorrhage.

It is the rule to find some degree of infection during the healing of tonsillectomy wounds. In the majority of cases the tonsillar fossæ become covered with a thick white membrane, which as it undergoes bacterial decomposition becomes extremely offensive in odor. Systemic absorption of toxins from this putrefying mass takes place directly through the wounds, and from the alimentary tract, since a considerable amount of the toxin is swallowed.

A general toxemic reaction presents itself, with the symptoms of malaise, weakness, headache, constipation, perhaps moderate temperature elevation, and sometimes gastric discomfort and nausea. The mouth is opened with difficulty, the tongue is heavily furred, and the breath is fetid. The muscles of the pharynx, the neck and the tongue become swollen, stiff, and painful. Swallowing, being very distressing, is carefully avoided, and food is refused as not worth the pain accompanying its deglutition. Abstinence from food further weakens the resistance and lowers the reparative powers. Such a condition continues until the slough is cast off. During the process of separation of the slough, secondary hemorrhage may occur, and at this stage of wound repair it is sometimes difficult of control.

A loss of from five to twelve pounds in weight during the healing period is common, at the end of which time the patient, though the throat is no longer painful, is but convalescent from the period of toxemia to which he has been subjected, and must devote further time to the recovery of that state of health which existed prior to the operation.

The results of the substitution of chewing gum for the gargle in post-tonsillectomy treatment will be a revelation to those who will try it. The attrition of chewing keeps the tongue and teeth clean. Chewing stimulates the secretion of saliva, which, being swallowed, laves constantly the wounded surfaces and lubricates the pharyngeal mucosa. The attrition of swallowing keeps down the membrane formation to a minimum, so that the usual white patches covering the tonsillar fossæ, which have often been mistaken for diphtheric membranes, are in some cases entirely absent. The fossæ being free from infection, the breath never becomes offensive, and for the same reason secondary hemorrhage is less likely to occur. None of the toxic symptoms are seen in such cases, though some reaction from the shock of the operation and the local trauma is to be expected.

The use of the muscles of mastication in the chewing lessens the stiffness of the jaws and the tongue, while frequent swallowing keeps the muscles of deglutition supple. Pain in the throat is thus much alleviated. Since the throat is less sore, and the toxic symptoms are lacking, the appetite at no time fails, and the patient readily complies with instructions to continue his regular diet. Well masticated solid food is more easily swallowed than liquids. It maintains a high level of nutrition, promotes a state of well-being, and hastens the reparative processes. The swallowing of solid food is in itself a potent factor in keeping the mouth and throat clean, a fact that is readily demonstrated in the coated tongues and foul mouths of fasting patients to be seen in every medical ward.

Gargles require preparation, as well as a

time and place appropriate for their use. Gum can be carried in the pocket, and, so universal is the habit in this country, it can be chewed in public without attracting the slightest attention.

Gargling after tonsillectomy is a painful procedure. The chewing of gum relieves the stiffness of the muscles of the throat and tongue, and lessens the pain in the throat.

The solution of the gargle merely bathes the surface for a fraction of a minute at each attempt, and can really exert very little antiseptic action in the strength of the medicament which will be tolerated by the normal mucosa of the pharynx. Gum on the other hand stimulates the flow of saliva which constantly bathes the pharynx with a specific mouth secretion. Gum depends for its action on mechanical cleansing, a method to which we are returning more and more in our efforts toward disinfection.

The throats of tonsillectomized individuals using chewing gum as an after treatment do not become infected. Secondary hemorrhage is less frequent. Healing is more rapid. A full diet being taken, resistance of the individual is maintained, little or no weight is lost, and no post-tonsillectomy recuperation period is needed.

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Certain Therapeutic Considerations in Connection with Renal Disease[1]

BY HOBART AMORY HARE, M.D.

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The design of this paper is not to present formal views of how diuretics produce their effects, but rather to bring forward points which will result in producing a discussion on the part of members of this Society.

In the address on Medicine which I delivered before the recent Congress of Clinical Medicine, I spoke of the misconception that exists as to the manner of action of the so-called alkaline diuretics which are given *ad libitum* by many practitioners in a host of conditions. Oftentimes the fact is lost sight of that they act not by a true stimulation of the kidneys, but induce an increase in urine output because the system cannot tolerate an excess of these salts, for it must maintain the normal tonicity of its fluids at 0.9 per cent. To give them without plenty of water to help wash them out is evil. To give potash salts without knowing that renal ability to eliminate potash is not impaired is still more evil, for if the potash cannot escape the body retains water to keep the salt diluted to its normal tonicity and the heart is depressed. The patient becomes dropsical because the physician and not the disease is responsible.

Again the question arises as to whether direct diuretics should be continuously given or whether the kidneys should have periods of rest. We are singularly obtuse as to the need of rest of viscera. That Nature means them to rest is manifest, for both kidneys do not act all the time but alternately, and not only is this true, but one part of the kidney works while another part rests, as is indicated by the work, among others, of Richards. No one expects the legs or the stomach to work all the time with no opportunity to rest.

In regard to other diuretics, such as digitalis, there is too little appreciation of the fact that any diuretic effect depends upon three factors, namely: Whether the body is provided with enough water to be able to part with it; whether the oliguria depends upon the presence of a feeble heart which if improved will increase renal pressure; and, third, whether the ability of the kidneys to

[1] A paper prepared to be read before the American Therapeutic Society and designed to elicit discussion.

eliminate water is the particular renal function impaired by disease. Obviously if this function is impaired the ordering of large amounts of water in each twenty-four hours cannot be other than hurtful.

As to the use of diuretics in the presence of acute nephritis, I believe that we are even more frequently in error. It might diminish therapeutic enthusiasm somewhat if all of us would at intervals take a course of instruction in pathology. If we did and examined the acutely inflamed kidney of, say, a case of scarlet fever we would not wonder that an oliguria or anuria had been present which resisted all our efforts because we could see that the kidneys were packed, so to speak, in their capsules as tight as meat in a sausage because of their swelling, and under the microscope Bowman's capsules would be seen stuffed with desquamated cells and extensively engorged Malpighian tufts while the uriniferous tubules would also be found packed full of exudate and cells. How any one can expect such a kidney to functionate either with, or without, the aid of diuretics is hard to understand. Would it not be equally rational to say in a case of croupous pneumonia, "I will give a drug with the object of making the plugged vesicles of the lung take up their function at once?" In this instance we know that we have to wait for autolysis to take place and for the removal of pathological material to occur. To force water in these cases of nephritis is certainly unwise. As much attention ought to be paid to the water ration as to the diet, giving the patient all that is needed to compensate for loss of fluid by the lungs, skin, and bowels, and a very small excess to provide the kidneys with fluid as soon as they regain their power of water output.

But some one will say that a paper read before a therapeutic society should not be iconoclastic but constructive. The answer to this criticism is a double one. First, there is no sense in blindly staggering on without knowing what one is doing, and a second reply is that limitations must be, if possible, clearly defined, and these can only be defined if water intake is measured, and urinary output taken as well. Most temperature charts have a space for noting "output" and none for noting "intake."

Again, an estimation of the chlorides in the urine is not difficult and may be taken as a fair gauge of the ability of the kidneys to eliminate salts. Easier still it is to use the Mosenthal plan of recording specific gravity every two hours in the daytime, being careful to note the intake, which should be standardized and measured, as well as the output.

If alkaline diuretics are used they must fail or do harm if salt retention is present, and if what may be called irritant diuretics, such as squill, are used they only serve to irritate an organ already highly inflamed or in a state of subacute irritation. Dead cells or secreting epithelium must be removed and new secreting epithelium grown before the kidneys can be justly expected to perform their function, and one of the reasons why iodide of sodium in moderate doses will often act as a diuretic in chronic parenchymatous nephrosis is probably because it helps to clear up what might be called renal débris. If there is marked inability to eliminate salts the iodide will probably fail or do harm.

Finally, when we consider diuretic drugs, particularly salts, we must bear in mind that that secreting epithelium, which is still capable of acting, has added to its already heavy burden of urinary solids in fever the additional burden of drugs.

Until our knowledge of renal secretion is advanced we will be badly handicapped in these cases, and when Richards tells us that he has devoted ten years, with the aid of assistants, to the study of secretion of only part of the kidney without solving all the problems presented, and recall that these recent studies are added to a host of others since the days of Heidenhain and Ludwig, we cannot fail to be impressed with the thought that the proposition in the presence of scanty urine of giving a diuretic is emphatically in accord with the words of the famous French cynic who said that physicians are persons who give drugs of which they know little to bodies of which they know less.

Differential Diagnosis of Pituitary Enlargements, With a View-point Toward Therapy

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There are a number of cases of apparent pituitary tumors which, having refused surgery, have gone on to improvement, and even cure, by virtue of therapeutic attack by means of glandular medicaments. Such cases have been described by Waldeck (1912), Clothier and Dewitte and Reber (1915), Elsberg, Krug, de Schweinitz, and Timme (1916). Curiously, many other cases giving similar symptoms of pituitary neoplasm are entirely unaffected by such therapy, and any relief that is sought must be of surgical character. It is therefore of the greatest importance to classify pituitary enlargements on a basis which will separate those amenable to glandular therapy from those that must seek relief through surgery. Such a classification, with a case description under each group, is hereby offered. The grouping is based upon an experience of about twenty cases of pituitary enlargement which were much ameliorated or even cured by glandular medication during the past ten years.

In each of these cases the pituitary disturbance followed either, first, some other glandular difficulties, such as castration, puberty, menopause, ovariectomy; or else, secondly, arose in those cases that have been described by me as belonging to the compensatory syndrome group, namely, those in which the pituitary gland presumably becomes hyperplastic in order to compensate for the deficiencies superinduced by a status hypoplasticus with deficient adrenals (which cases have the earmarks of status thymicolymphaticus); or, thirdly, developed in a group formed by those patients residing in goitre regions. The inactivity of the thyroid in these produces again a compensatory enlargement of the pituitary with all the signs, metabolic and pressure, that bona-fide pituitary tumors produce. Not to bore too long with case recitals, I still must crave indulgence at this point to cite rapidly the most interesting and suggestive types representative of these three groups.

First Group.—Several examples of pituitary disturbance, following upon hysterectomy as it was practiced fifteen to twenty years ago for many minor complaints—the so-called hysteria, among others—giving many symptoms of neoplasm, recur to my mind. Interesting in this connection is one case operated upon by Lawson Tait, which developed the headache, the acromegaly and some contraction of the fields many years after the abdominal operation—in fact, at the time the normal menopause would have arrived. This case, as are all those that follow ovarian disturbances, is much benefited by various forms of ovarian glandular products, in addition to pituitary medication. Destruction or ablation of the testicles may occasionally likewise produce an enlargement of the pituitary resembling a neoplasm. While these cases do not succumb to testicular glandular therapy, yet the administration of pituitary extract and pituitrin usually will keep the hyperplasia in check.

Second Group.—The second group of pituitary disturbance simulating neoplasm is that in which the pituitary becomes hyperplastic in the course of compensation for status hypoplasticus. These cases are frequently found to have large and persistent thymus glands, small cardiovascular systems, and small adrenals. They develop the intratemporal headache of pituitary disease, a large and eroded sella, giantism, occasionally mild degrees of choked disc, and contraction of the fields. The treatment of these cases, as outlined by me elsewhere, consists in the administration of small doses of iodide, thyroid and pituitary substance (a combination of one to four grains of the anterior lobe and one-tenth to one grain of the whole gland). The pituitary medication per os, in order to be effective, in my experience at least, ought to be

given at least two hours after meals. Pituitrin, which may be used in conjunction with feeding of the glandular product, has many disadvantages when given hypodermically. It may cause at first intense pallor and prostration with syncope, and if given over long periods of time, marked asthenia. In the past two years we have been giving it in drop doses by nostril in a medicine dropper, or in the retropharyngeal space with a throat applicator. Excellent results are obtained by this method—even in those cases with the intense polyuria of diabetes insipidus.

Third Group.—One patient of this group, truly representative, and of intense interest from several glandular standpoints, a woman of forty-two years of age, highly intelligent, living in central New York State—a goitre region—began to complain in 1918 of intense headaches, intratemporal in character, accompanied later by nausea and vomiting, a gradually increasing adiposity, lethargy, confusion of thought, loss of memory, and progressive loss of vision. Her visual fields, examined at the Cornell Clinic at Ithaca, were found bitemporally hemiopic, the sella turcica enlarged and eroded, and there seemed only one solution to the situation. These examinations were not all made at one time, but over the course of two or more years. The condition in this time became progressively worse. Dr. Martin Tinker of Ithaca had been asked to see the case in view of an impending sellar decompression, and not entirely satisfied to do the operation without first giving the patient the benefit of glandular therapy, referred the case. Our examination confirmed practically all his findings, and in addition we determined the basic metabolic rate, which was found to vary from plus 20% to plus 5%. The patient had a slightly enlarged thyroid struma of rather boggy consistency. A skin reaction line could not be elicited, and her subcutaneous tissue gave one the impression of a mild myxedema. To us the case seemed clinically to be both hypothyroid and pituitary in its aspects, and our treatment began with the administration of small doses of sodium iodide and of thyroid in spite of the high metabolic rate. In a few weeks the headaches disappeared, the myxedematous appearance vanished, the patient lost weight, her mental confusion lessened markedly, the nausea and vomiting ceased altogether, and the visual fields gradually improved. The basal metabolic rate became *reduced* to minus 5%, and this on thyroid medication—a direct contradiction to the accepted doctrine of the relationship of thyroid activity to basal metabolism. After a few weeks, whole gland pituitary substance, grain one-fourth, twice daily, was added to the other medication, and pituitrin was occasionally given hypodermically, but produced such asthenia that it was discontinued. On varying dosages of these three medicaments the patient made a complete recovery, so that to-day she is well in every respect, even including her visual fields. Of great interest is the added fact that one of her children was beginning to show a pituitary condition which succumbed to the mere administration of iodine.

The interpretation of this case of course would be that the pituitary symptoms were produced by a compensatory enlargement—hyperplasia—due to thyroid deficiency, giving all the signs of pressure produced by a neoplasm. The basal metabolic rate is interesting as it does not conform to the usual low rate of the myxedematous patient. Perhaps it was kept above the normal level by an overactive pituitary; at any rate, the case is a classical example of the vagaries that may be produced in the course of an iodine deficiency. Furthermore, the *reduction* of the metabolic rate by thyroid administration is against all rules thought to be established in this domain. The possible criticism that there was error in the performance of the tests is negatived by the fact that the many determinations that were made were in different cities in different laboratories by different technicians, and were all within reasonable closeness of result. To put it succinctly: a patient, coming from a goitre region, with myxedema complicated with pituitary hyperplasia, gave a high basal metabolic rate which was lowered by thyroid and iodide medication—a paradox.

These three types of hyperplasia of the pituitary gland then represent the groups that may be markedly helped and even en-

tirely cured of their complaints by glandular medication. As each of these groups represents a pituitary mass which in every respect may produce the symptomatology of a true pituitary neoplasm, from metabolic nuances to the gravest of pressure symptoms, it is advisable that they be thoroughly studied and understood, as their differential diagnosis from neoplasm may save many an operative hazard. Occasionally, so-called benign adenomata arise in these hyperplastic tissues, and then there is no sharp line of demarcation between hyperplasia and tumor formation. True neoplastic growths of the pituitary, or in its neighborhood, can no more be influenced by glandular therapy than they can elsewhere in the body. The three important criteria, then, that serve to distinguish these cases having pituitary masses amenable to glandular therapeutic attack from those with true neoplastic growth are:

1. Previous operative or other critical disturbances of the gonads.

2. Status thymicolymphaticus preceding the pituitary symptoms.

3. Long-standing thyroid insufficiency, especially as found in the goitre belt with lack of iodine.

Perhaps, as is more than likely, this grouping will be found to be inadequate or to need much qualification. It is but a crude beginning toward a nicer discrimination of pituitary enlargements.

Care and Treatment of the Psychoneurotic.

JONES in *Minnesota Medicine* for September, 1925, states that one very important thing in the study of the psychopathic is the possible benefit of marriage. The chances, of course, are very great against the improvement of the race by the marriage of a psychopathic individual to a normal one having a good heredity, because it is impossible to tell who will be the determining factor in the offspring. Granted that the strain is good on the family side, and that either of the persons about to be married has only acquired defects, the probabilities are that neither one will suffer nor will their descendants suffer. On the other hand, if the man has all the errors of his blood, they will crop out, and the probabilities are that something detrimental will happen to the offspring. With this there is a saving clause, however—a man or woman who carries the skeletons of the family also carries a large host of virtues; so perhaps virtue may predominate over disease or defect, and thus a happy strain is brought about.

There has been a great deal of talk about cousins marrying, and both the church and the law have pondered over it and shuddered at it. Even in the 18th chapter of Leviticus there are thunderings of divine wrath upon "the man who shall approach unto any that is of near kin to him;" and yet cousins marry, near cousins as well as distant cousins, brothers and sisters, and fathers and daughters marry—and if the strain is good there is no probability of any outcropping of anything unfortunate. But if the strain is bad, there is the same likelihood as there is in the mating of other adverse and contradictory strains, with the same result. In ancient Egypt during the reign of the Ptolemies, who ruled over Egypt and gave it a polished and brilliant civilization for many centuries by the sheer intelligence and character of its members (this includes the ancestry of Cleopatra), there was the highest imbreeding in recorded history without ill results. The family furnished illustrious and able rulers for centuries. Many similar brother-and-sister, uncle-and-niece marriages took place among them from the first to the twelfth Ptolemy. The families of the present rulers of Siam have intermarried in a similar manner for 4000 years except in the past two generations. The marriage of Charles Darwin, with his cousin, Emma Wedgwood, granddaughter of the founder of the great Wedgwood potteries, has resulted in four sons who have been ornaments to the history of England. Other famous intermarriages bear the same record of good results. It is said by Wiggam that dominant qualities under typical conditions do not ever skip a generation, but recessive

qualities will skip one to four generations. On the other hand, intermarriages have wrecked some of the royal houses, particularly the houses of Spain and Austria—after insanity had crept into the blood, probably through the grandmother of Charles V. of Spain.

It hardly seems necessary to go into the symptoms of the psychoneuroses. They are usually of a mixed type, and they embrace almost any complaint that can be described by a patient. Hence these unfortunates are often looked upon with indifference and are treated accordingly. They should be as carefully investigated as any other sick person, for their complaints are very typical and just as discomforting to them as those of a patient suffering from any other disorder. They are easily fatigued and exhausted mentally, and that means that the fatigue and exhaustion are transmitted to their physical apparatus. Naturally everything that is contained within them becomes irritable and disturbed, and they are classified under the common names of neurasthenia and psychasthenia because these are easy terms to use, and, as they cover a multitude of the sins of omission on the part of the doctor, they are convenient terms.

One will find that most of these people complain of headaches and uncertainty; they are supersensitive, have vague pains, and are more or less sleepless, and they are probably emaciated or at least their somatic functions are so disordered that their chemistry is entirely changed. The first thing these people need is protection. That means that they must be given an opportunity to recuperate, to restore the activity and vitality of their tissues, which requires proper feeding. It does not necessarily mean that they must be overfed or overfattened, as with the old form of rest cure. It is much better for them to gain in weight slowly, or even to hold their weight rather than to increase the amount of substance. The eliminating functions of the various organs of the body should be carefully attended to. The kidneys should be assisted in their functions by the proper administration of water, the use of baths. The intestinal tract must be looked after by the usual careful methods of feeding and a general clearing-out process by enemas and sometimes laxatives of a simple sort. Above all, we try to improve their mental and emotional habits, first explaining to them that they can tell their story once and for all, explain away their fears and combat their obsessions; and teach them to use self-control. Under the circumstances, rest is the one and imperative thing for them to go through, and this period of rest varies according to the individual.

A man or woman who has been in a disordered state of mind and body cannot rest in a few weeks. Such patients must have a long enough period so that they can really make some start toward restoration. During all of this time much of their digestive disturbances can be overcome; their constipation disappears because they are properly fed, and properly cleaned out. Their muscular activity improves under rest rather than under forced exercise, in an exhausted individual. Their appetite is a matter of no special concern. They are simply told to eat, ordered to eat, and are fed, if necessary, without regard to whether they want food or not. They must be trained to sleep, even at the expense of giving them some of the milder soporifics. There is much said about the harm that drugs do, but when patients are in a hospital and properly managed it is very easy to remove the drug when advisable, and eliminate the habit. If one can keep them long enough, rest them long enough, and separate them from their families long enough, and eliminate the curious and so-called sympathetic friends, these people get so much better they are astonished at themselves. They get a better hold on life, they have learned during their course of rest and training that there is something worth while trying for. The ordinary, common, every-day assurance on the part of the doctor who does nothing else, furnishes little relief for these unfortunates. To make them better one must do something for them and make them understand why it is being done.

Editorial

SOMETHING ABOUT DIGITALIS AND OTHER CARDIAC DRUGS.

It may be said with truth that our knowledge of the physiology and pathology of the heart has advanced more in the last two decades than in any previous period, long or short, and this is practically equivalent to the further statement that, with such increased knowledge, our conception of how drugs act upon the heart has also made a wide advance. Our administration of all cardiac drugs, and particularly digitalis, is now more accurate and more efficient. There can be no doubt that in earlier times the doses which were administered were inadequate to meet certain conditions which required heroic treatment.

The old teaching was that 20 minims of tincture digitalis three times a day was an adequate dose in ruptured compensation of the heart. This is now known to be a great error in severely ill persons, but the advocacy of very massive doses administered to a patient with badly ruptured compensation once, twice, thrice, or even more than this, has led many practitioners to a belief that these massive doses are advantageous in every case, with the result that over-digitalization is often undoubtedly induced. It is quite true that in some cases of auricular fibrillation very large doses of digitalis are essential to meet the needs of the case, but it is equally true, as the writer knows from repeated clinical experiences, that there are a goodly number of patients who even if they are not put at rest, will have evidences of mild decompensation dissipated by doses which do not exceed 20 or 30 minims of an active tincture given in twenty-four hours, so that a patient who may have an apex beat of 120 and a radial beat of only 70, producing, therefore, a pulse deficit of 50, will in a few days have no pulse deficit whatever. The writer of this editorial note has three such cases under observation at this time. It will be recalled further that sometimes the use of from 6 to 10 grains of quinine a day in addition to these doses of digitalis acts most advantageously in ruptured compensation complicating auricular fibrillation.

In other words, the proposition in regard to the employment of digitalis in any cardiac state is largely the same to-day as it has always been, namely, a consideration of the individual patient's needs and a recognition of the fact that the doctor who gives the smallest amount of medicine necessary to accomplish recovery is the patient's best friend.

In those instances in which, for various reasons, the patient is unable or unwilling to rest, there can be no question that the administration of large doses may be exceedingly dangerous. Indeed, a patient with ruptured compensation who is taking small doses may be considered to be safer than another patient who is taking massive doses, the more so as we must recall that digitalis is cumulative in its effects. Thus, it has been estimated that the ordinary individual who takes digitalis is only able to get rid of, by excretion or destruction, the equivalent of about 15 minims of the tincture in twenty-four hours. It is manifest, therefore, that if he is given very large doses three times a day, by the end of forty-eight hours he is, to use the term which is now popular with certain clinicians, not only "digitalized," but to use a second popular term, "saturated."

In a recent paper by White published in the *Boston Medical and Surgical Journal*, he expresses the belief that although there are a dozen or more drugs said to possess an action like digitalis, such as strophanthus, squill, apocynum, and convallaria, there is no place for these drugs in the treatment of heart failure, with the possible exception of strophanthus. We presume that this statement really means that digitalis, being

facile princeps, is always the remedy of choice.

Concerning quinidine, he recognizes that it has failed to become popular because certain warnings of its action have been published, but he thinks that if proper preliminary studies are made, accidents will rarely occur, although admitting that after having used quinidine for two years with no accidents, no toxic effects or embolism, recently a death has occurred in one of his patients, who, it is only proper to state, may have taken an unduly large dose. In any event, if quinidine is to be employed, we believe that the electrocardiograph should also be used to study the heart, and we agree with White that small doses should be given at the beginning of the treatment to determine the sensitiveness of the patient to that drug. White thinks that a dose of two or three grains should be used before larger ones are tried. If they go well, the following day as much as six grains may be given at two-hour intervals for five doses, and this may be continued for a week unless normal rhythm is established earlier. We also agree with him that in these cases the patient should be instructed to remain in bed, or certainly not to make any undue effort. If definite cardiac degeneration is present quinidine is too depressant to be safe.

White thinks well of adrenalin in cases of the Stokes-Adams syndrome, but, for obvious reasons, its effect can only be fleeting. He strongly recommends caffeine as a respiratory stimulant in doses of 5 to 20 grains, but thinks it of little value in cardiac failure.

Last of all we wish to quote a remark made by Peabody in his discussion of White's paper, namely, that while very much larger doses of digitalis than used to be considered proper may be employed, an unfortunate result of this fact is that many physicians are coming to think that because digitalis can be given in large doses it should always be so given. It is only fair to state in conclusion that this point, emphasized by Peabody, is evidently thoroughly believed in by White.

ADDITIONAL POINTS AS TO BLOOD-PRESSURE.

An essential fact to be recalled by every physician who estimates the blood-pressure, and in nearly every field of practice this is an important thing to do, is to remember that the blood-pressure in a normal individual, and indeed in one who is abnormal, is never constant. It varies not only with exercise but with digestion and in disease and with the nervous and mental state of the individual. Indeed it often happens that the systolic pressure when first taken may be 10 or 15 points higher than it will be if the air is allowed to escape from the cuff and the estimation made a second time. This illustrates the psychic effect upon the circulation of an examination.

It is also to be remembered that while in general terms it may be said that a perfectly normal pressure is one which is 125 to 135 systolic, and from 75 to 85 diastolic, there are many people who may be said to be by nature low-pressure patients and still others who may be normally high-pressure patients. It not infrequently happens that a man of fifty years will be in perfect health with a blood-pressure of 125 or 135 systolic, while another individual, also in perfect health, will range from 145 to 155. Indeed, it may be said that while in the past we have been accustomed to consider individuals as "nervous" or "phlegmatic" and to base our study of the case somewhat upon temperament, it is now important to recognize that these two classes of patients, to which we have just referred, give us a good idea of the normal variations which may occur in health.

Still another point, which is becoming more and more emphasized, is that diastolic pressure is a much more important factor in the study of a case than systolic pressure. Variations in the latter of 20 or even 30 points may present little that is abnormal, whereas variations of 5 to 10 points above 100 in diastolic pressures possess much more significance.

Last of all, it is possible by studying

diastolic and systolic pressures to reach a fairly definite conclusion represented by figures as to what has been called by Barach the "energy index" of the circulation. To do this, the diastolic and systolic pressures are added together and multiplied by the pulse rate; thus, if the diastolic pressure is 70 and the systolic pressure is 120, making a total of 190, and this figure is multiplied by a pulse rate of 72, the energy index will be 13,680, and this figure according to Grover represents a normal energy index, although the range in perfect health may vary from 13,000 to 20,000. It is claimed by Grover that when the figure exceeds 20,000 an excessive circulatory load is in existence.

This method of calculating the circulatory condition seems to us of very considerable value, not only in general medicine but in connection with the subject of the use of anesthetics, and in the determination as to whether a patient is a good operative risk, or, after operation, whether he is making the recovery which a normal person should accomplish.

POSTURE IN PULMONARY DISEASE.

Those who have had a large experience in dealing with pulmonary tuberculosis which has gone on to cavity formation are fully aware of the importance of having the patient lie in such a position that the cavity drains automatically without the necessity of using severe or constant cough to pump out its contents. Our readers will recall that in a recent issue of the THERAPEUTIC GAZETTE we called attention to an investigation which showed that the bronchial tubes elongate and shorten with each movement of respiration, and it has also been emphasized that the cilia which line these bronchial tubes are continually making a motion which tends to bring secretion from the ultimate tubes up into the larger ones.

A paper by Neild of the Bristol General Hospital, England, has recently appeared in the *British Medical Journal* dealing with the importance of posture through bronchial drainage. He points out that when lying on the back the fluid from the lungs collects in the pharynx or nose and it is not easy for the patient to get rid of it, and if, perchance, he is asleep or unconscious, this objection to the dorsal posture is still greater. Theoretically it would be advantageous in many cases if the patient lay prone, but while this would aid in preventing the accumulation of secretion in the upper air-passages, it interferes with the expansion of both lungs, and it is almost impossible to get the head and neck in a comfortable posture. The lateral posture when one lung is invaded has, as we have already indicated, the advantage of gravity in drainage, but if both lungs are involved, one has to make the choice as to which one is producing the greatest amount of sputum.

It is also to be recalled that the bifurcation of the right and left bronchus is not identical, and this fact should govern the physician somewhat in advising the patient as to the attitude which he should assume. In some instances it is best that he should lie half-way between the lateral and prone positions, and in others half-way between the dorsal decubitus and the lateral posture. The nurse can be instructed as to the position which the patient should assume, and a pillow or bolster may be employed to maintain that position.

In other instances it is distinctly advantageous to raise the foot of the bed, and to use a pillow just above the pelvis when the patient is in the lateral posture so that he is prevented from slipping toward the head of the bed. Neild even advises that the patient's head be brought near the edge of the bed so that the lips are just beyond the edge and a corner of the pillow tucked under the neck behind to help him maintain this position. Neild adds that this advice is not only advantageous in cases of tuberculous cavity, but is life-saving where there is a profuse hemoptysis. Needless to say, the less coughing the better in a case of this kind, since the effort at coughing is apt to dislodge any clot which would otherwise help to arrest the hemorrhage. The placing of the patient in a position which will assist in the escape

of blood will prevent death occurring as a result of all the bronchial tubes being rapidly filled. Of course very profuse hemoptysis, sufficient to produce drowning in one's own blood, very rarely occurs, but any means which tends to keep the bronchial tubes free of blood does much to prevent secondary bronchopneumonia.

Neild quotes an interesting case in which a patient apparently died not from the loss of blood, but from the filling of the respiratory passages with this fluid, and was resuscitated, after artificial respiration had failed, by being inverted. As a result of this changed position of the patient a large clot came away, followed by some blood, and respiration was reëstablished, the patient surviving the attack.

Proper posture as to respiratory drainage has also to be remembered in cases of pharyngeal palsy following diphtheria or arising from other causes. On the other hand when there is paralysis of the diaphragm the patient should be put in such a position that the abdominal contents will not press upon it and so impede respiration.

Neild also states that while he has no personal experience as to postural drainage in cases of bronchiectasis, it must be of use in some cases. This is undoubtedly true as we know from experience at the bedside. While posture will not aid in draining all the tubes that are affected, it may succeed in draining those which are most dilated, or sacculated, and these tubes can be determined by the *x*-ray, or if that assistance to diagnosis is not at hand, by determining through experiment the posture which results in bringing up the greatest quantity of sputum.

Of course there is no position that is perfect in that all parts of the lung are properly drained, and in some instances it may be necessary to assume different postures at different times of the day or night in order to get the best results.

Finally, it is not to be forgotten that hypostatic pneumonia can be to some extent avoided by seeing to it that the patient's position is changed from time to time. All too commonly a very ill patient, or a very aged one suffering, for example, from a fracture, is permitted to lie flat on the back, with the result that a pulmonary complication ensues.

THE CORRECT FORM OF HYOSCINE.

Our readers are well aware of the fact that most of the hyoscine so-called which is placed upon the market is really scopolamine, a substitute which is justified by the United States Pharmacopœia. It has been claimed that there is little need of a physician inquiring as to the purity or physiological effect of a given specimen of hyoscine, because the actions of various products are practically identical, but it is important that our readers should be informed of investigations carried out by Moir of the Pharmacological Laboratory of the University of Edinburgh, who reminds us that hyoscine exists in two forms which react to chemical agents identically, but which differ in the direction in which they rotate the plane of polarized light; the levorotatory alkaloid is that occurring in nature and the one which should be used in therapeutics, and the dextrorotatory alkaloid may be formed artificially from it. Moir points out that the levorotatory hyoscine and adrenalin are some 15 to 20 times as powerful as are dextrorotatory hyoscine and adrenalin.

Carrying out his investigations at the suggestion of Cushny, he determined the efficiency of these two hyoscines in producing twilight sleep and in controlling restlessness in cases of insanity. The dextrorotatory cases numbered twelve, in which it was desired to induce twilight sleep, and in no one of them was there amnesia or impairment of intelligence observed, nor was there any alteration in the sensation of pain, and further an increase over the standard dose produced no change in results. On the other hand, the levulo-hyoscine cases numbered fifteen, and in ten there was complete amnesia, the patients remembering nothing after the first or second injection. In three amnesia was almost complete, while in two it was slight.

These experiments were carried out in a noisy ward, and better results would have accrued had the quiet, which is so essential in twilight sleep, been possible. It was also found, so far as the child was concerned, that when levulo-hyoscine was administered it was not unusual for several minutes to elapse before respiration was satisfactorily established. This did not occur when dextro-hyoscine was employed, which, of course, does not indicate that dextro-hyoscine is the preferable drug, but on the contrary that it is quite impotent. It is not claimed that the dextro type is powerless, but that it is far less efficient. So far as cases needing control of restlessness or of insanity are concerned, it was also found that the cases which received dextro-hyoscine manifested few symptoms which could be attributed to the drug, even repetition of the dose being ineffective.

IODINE AND GOITRE.

Although so much has been published upon this subject within the last few years, its importance justifies constant attention being paid to it. Our readers will recall that at one time iodine, in one form or another, was considered an agent of value in any enlargement of the thyroid gland as it was supposed that all forms of thyroid enlargement were due to a lack of this element in this gland or that it acted as a resolvent, but no less eminent a Swiss surgeon than Kocher pointed out many years ago that the administration of iodine to unsuitable cases induced a condition closely resembling exophthalmic goitre, the resemblance being so marked that Breuer called it "iodine Basedow." As a result of these warnings it came to be generally considered that iodine was contraindicated in goitrous enlargement, and it was not until Plummer proved the extraordinary value of iodine in preparing cases, of exophthalmic goitre with high basal metabolism, for operation that enthusiasm was once more engendered.

The remarkable studies of Marine and others proving that ordinary goitre could be prevented, in certain parts of the world where iodine was lacking in water supplies, added to the enthusiasm engendered by Plummer's work, and then swept from their feet by this enthusiasm certain persons proposed that minute quantities of iodine be introduced into the drinking-water of large communities so that their inhabitants would of necessity receive this preventive agent.

It now appears that, however valuable iodine may be for the purpose of reducing excessive metabolism in exophthalmic goitre when preparing a patient for operation, its continued use is distinctly disadvantageous in that when it is stopped, no operation being performed, the symptoms of this strange disease return in an exaggerated form. It has also come to be well recognized that in adenomatous goitre, the condition usually found in the third and fourth decades of life, the administration of iodine is absolutely contraindicated because the patient suffering from such a goitre, but presenting no evidence of hyperthyroidism, is prone to develop symptoms of true hyperthyroidism if iodine is given.

Jackson has recently made a most interesting contribution on this subject to the *Boston Medical and Surgical Journal* with particular reference to the employment of iodine in colloid goitre, and states frankly that he is "not too well satisfied" with his results. Thus in one series of at least 100 cases in which iodine was administered over a period of two years, little or no appreciable effect was produced, but, he adds, until we find a more positive etiological factor than iodine deficiency as a cause of goitre, he believes we should continue to administer iodine for colloid goitre.

It is not to be forgotten that this applies to the plan of universal iodinization suggested in connection with water supplies, and that those who have colloid or adenomatous goitre will either not be affected at all or be affected disadvantageously.

Jackson then goes on to consider a series of 50 cases of iodine hyperthyroidism which

he believes should be definitely differentiated from exophthalmic goitre and toxic adenoma. It occurs only in persons with adenomatous goitres and is characterized by tremor, nervousness, loss of weight, tachycardia and loss of strength, with insomnia, which is seen in true hyperthyroidism, but he thinks that the nervousness is of a peculiar characteristic type, there is an extreme degree of restlessness, and there develops in some instances a condition bordering on delirium. The loss of weight is often extraordinary and rapid. Thus two patients lost more than fifty pounds in two months. The ravenous appetite sometimes seen with exophthalmic goitre does not occur, and Jackson thinks that the iodine prevents digitalis from having any effect upon the tachycardia.

Another point whereby iodine hyperthyroidism can be separated from true exophthalmic goitre is that in this artificially induced condition, thrills, bruits, and exophthalmos do not occur. In his group of iodine cases the basal metabolic rate was plus 31 as against plus 29 in some cases of toxic adenoma, and plus 54 in a series of cases of exophthalmic goitre. Jackson asserts that not only may symptoms of hyperthyroidism be induced by the careless use of iodine, but in some instances the condition may become so grave, as the result of the ignorant use of this drug, as to produce a fatal termination. Eight of his patients with adenomatous goitre suffering from these symptoms had been treated by the same physician with iodine and three terminated fatally. Should such a condition be induced, the only hope of benefit is the prompt discontinuance of the drug, prolonged rest, and sedatives. So dangerous is iodine that Jackson has no fear in asserting that iodine hyperthyroidism has a higher mortality than any other form of toxic goitre, and in those who are subjected to thyroidectomy he finds that their chances of recovery are diminished, they often remaining delirious for days, suffering a stormy convalescence with an alarmingly high pulse rate.

The following facts, therefore, seem to be worthy of being borne in mind, namely, that in regions where there is a high incidence of ordinary goitre in the young, very minute doses of not more than one or two grains of iodine sodium may be taken at intervals over long periods of time as a preventive measure; that in true exophthalmic goitre moderate doses of Lugol's solution may be employed to reduce the basal metabolic rate to approximately normal before operation; that in colloid goitre the drug will probably do little good and may do harm unless it is carefully watched; and that in adenomatous goitre it is absolutely contraindicated.

THE EFFECT OF TESTICLE GRAFTS ON ACTIVITY.

Because of well-conducted and carefully observed laboratory studies, corroborated by a number of observers, there seems little doubt but that by testicular implantation in animals previously castrated there may be an augmentation of sexual desire and the development of male characteristics, both physical and psychic, which would otherwise have remained latent. On the basis of these observations there have been many reported and perhaps many more unreported cases in which an effort has been made to produce similar effects in men impotent through age, through inherited defect, or for other causes which do not directly affect life. Some of the reported results challenge criticism from the fact that they describe senile men and women regaining the attributes and the charm of youth. The theme has been used by the novelist more than once, by the newspaper man thousands of times.

In regard to the experimental work which all seems so largely corroborative, it is not amiss to quote Hoskins (*Endocrinology*, July, 1925), who by means of an adaptation of an old-fashioned squirrel cage tested the spontaneous activity of rats. He observed that in one case an individual young adult ran approximately

950 miles in 120 days. Hoskins found that castration reduced the activity during the most vigorous period of life from about 15,000 revolutions to about 3800 per day.

The grafting material was obtained from healthy young adult rats. In eight cases the Stanley method of implantation was used. In five cases pocket implants were made. Similar studies with spayed female rats showed that the ovarian activity was markedly increased by successful ovarian grafts.

In the fifteen experiments with castrated rats, three in senile subjects, the activity as recorded was markedly below that of normal young adults. Testicular grafts persistently failed to bring about any significant improvement of activity.

Bearing on the objective results of gland grafts Steinach speaks of the coarser hair, larger skeleton and increased weight of his masculinized animals. Sand, Lipschutz and Moore all hold that testicular grafts result in hypertrophy of the clitoris well beyond the limits of spontaneous variability. Wilhelm noted a considerable degree of rejuvenation in the nerve cells of senile dogs in whom testes had been grafted, and a gain in weight; whilst Kustria reports the eruption of ten new teeth in a twelve-year-old cat.

In human cases Retterer and Voronoff observed a loss of 7 kilograms in a fat, sluggish subject with improvement of strength; and Lydston reported a loss of forty pounds of "flabby fat" and transformation of a lethargic individual into an enthusiastic athlete. Hunt observed a marked degree of restoration to brown of the gray hair of a man of sixty-five.

Hoskins, who has collated these and many other observations on the subject, holds that there can be no longer a reasonable doubt as to the constitutional rejuvenation and erotization incident to testicle grafting. Indeed he believes the evidence so convincing that it becomes the duty of the surgeon not to reject a method which at least promises much, but rather to concentrate upon such technique as will insure the life and persistence of transplanted testicular tissue. While it is true that Foerster observed no beneficial results when his method of treatment was employed in precocious senility, Sand records marked rejuvenescence which lasted but a few months. McKenna notes a persistence of beneficial effects for eight months; and Lydston, Lichtenstern and Thorek note that the symptoms of betterment persist for years.

As to the quantity of gland which should be transplanted, allowance must be made for the inevitable loss of at least a part of it by atrophy and absorption. Lipschutz has experimentally demonstrated that one per cent of the normal testicular weight is enough to insure proper bodily development of guinea-pigs. In the mouse 4 per cent of weight was enough to accomplish masculinization.

As for the persistence of grafts, Hoskins reports a considerable number of observers who have demonstrated that these entirely disappear, and within a few weeks. There are, however, one or two instances in which the laboratory implants examined later were found to preserve even their spermatogenic function. It was noted that in man better results are secured when rudimentary testes are present than when the testes are completely absent or have been removed.

It seems to be generally accepted that the majority of implants necrose; and that the persistence of the interstitial tissue is largely dependent upon the technique of transplantation which is employed.

RENAL DECAPSULATION.

Not so many years ago, when renal surgery was in its infancy, one of the factors which were supposed to be responsible for a multiplicity of symptoms was movable kidney. Hundreds of cases were reported in which the kidney, which is a mobile organ, was secured in place by various forms of suture and with greater or less efficiency, depending upon the type of operation adopted. The results were, in the main, successful at least from the standpoint of the surgeon, since the patient did not

shortly die, and incident to rest in bed, careful diet, and occupation of the mind, for which provision is made in all well-conducted hospitals, was for the time being relieved of those symptoms which were dependent upon a neurosis. A frequent, prompt, and often exaggerated recurrence of these symptoms, and the common sense of the profession at large, have been responsible for an abandonment of the operation of anchoring the kidney in that fossa in which it should be mobile, excepting in the few instances where the mobility is so great that an actual kinking of the ureter may occur, or where because of an aberrant vessel the same effect is produced. Under these circumstances, and since such aberrant vessels are in reality without anastomosis and their ligation implies atrophy of secreting substance, nephropexy may be performed with advantage to the patient.

A comparatively late phase of renal surgery has to do with renal decapsulation on the theory that the tough capsule of the kidney if removed may enable a collateral circulation to develop to such a degree as to maintain function. Such procedure has been applied in cases of progressive chronic nephritis, and again with reported instances of the successful result. There have been so many failures, and autopsies have proven so conclusively that such collateral circulation does not develop to a helpful degree, that from this standpoint the operation has been abandoned.

In case of emergency, however, incident to suppression of renal function, accompanied as it may be by vascular engorgement of the kidney, it has been thought that splitting or stripping of the renal capsule by relieving renal pressure may restore a circulation adequate for excretion, and, indeed, many times this result has seemed to follow.

In this relation, Quimby, in "Transactions of the American Association of Genito-Urinary Surgeons," vol. xvii, 1924, reports three cases. One was a case of hemorrhagic nephritis, one of acute tubular nephritis from bichloride poisoning, and one of chronic glomerular nephritis. These cases were carefully followed with respect to blood chemistry, as well as in regard to more general observations, and in none of them did the faintest benefit accrue. Quimby in his paper gives the complete pathological reports.

It is well within the bounds of possibility that this operation, performed as it is *in extremis,* may be serviceable. It is easily and rapidly done; it is seldom attended by shock. It has certainly been followed by at least a temporary recovery. It still remains to be proven that under such circumstances the decapsulation had anything whatever to do with this recovery.

The vagaries of renal suppression are well known. After many days, and for no cause to which credit may logically be given, an improved and rapid return of function and a disappearance of all symptoms has been observed more often than it has been reported.

It is because of this fact and because it is a part of human nature to assign causes, that both surgical procedures and medical treatment have been given vogues to which they are not really entitled.

To the man who after four days of complete retention comes the good fortune of having rapid restoration of function after the injection of renal substance, this result proves conclusively and fully the value of the treatment.

It is not fair to judge the success of renal decapsulation by the reported cases. The natural tendency is to report a success, and —to forget a failure. Quimby's report is an exception to this rule, and one which, were it more frequent, would be highly profitable to the profession.

Progress in Therapeutics

Medical Therapeutics

The Induction of Premature Labor.

In the *Lancet* of September 5, 1925, IVENS, CANTRELL and REID call attention to the fact that the first history of an induction of premature labor is that by Louise Bourgeois, midwife to Marie de Médicis in 1608. In 1756 a conference was held in London to discuss the frightful mortality of Cæsarean section, when Denman suggested induction of premature labor by rupture of the membranes as a therapeutic measure. Macauley, of London, was the first to perform the operation on the wife of a linen-draper in the Strand. In 1836 Kiwisch, of Wurzburg, introduced the method of induction by repeated douches of hot or cold water. In 1852 Barnes made use of an hourglass-shaped rubber bag with stop-cock. In 1855 Krause introduced a method of induction by the insertion of a flexible bougie into the uterus. A few years later, in 1888, Champetier de Ribes' bag was invented, but could only be used after dilatation of the cervix. Small bags of very thin india-rubber were devised by Horrocks, of Guy's Hospital. Galabin approved this method, which he considered to be the most perfect, since it has the advantage, as compared with the use of the bougie, that there is very little risk of separating the placenta. The only difficulty is to get rubber bags made thin enough to dilate easily by hydrostatic pressure and yet strong enough not to burst.

Other methods, such as ecbolic drugs, separation of membranes from lower uterine segment, massage of breast or uterus, injection of glycerin between membranes and uterine wall, electricity, cervical tampons, have also been used, but have nearly all been discarded with the exception of the quinine and castor-oil method, which is only successful in a small proportion of cases.

The question of the propriety of the operation has been much discussed, more especially in cases of minor pelvic contraction. Williams thinks it has lost popularity in America owing to the high fetal mortality. He himself has only done one case. In 391 operations by Ahlfeld, Bar, Leopold, and Pinard, the fetal mortality was 12 to 45 per cent, though the maternal mortality was only 1.03 per cent. They therefore held that it was no longer justified, and that equally good results for the mother, and far better for the child, would be obtained by subjecting the patient to the second stage of labor and resorting, if necessary, to Cæsarean section. Kleinwachter concluded, after an exhaustive study of the subject, that 78.3 per cent of children were born alive, but only 60.4 per cent left hospital alive. He considered that probably half of these born alive would die during the first year owing to unfavorable environment. He thought the operation should be abandoned, except when the child is abnormally large from excessive development or undue prolongation of pregnancy. Sarwey, in 2200 cases, found a maternal mortality of 1.4 per cent, and 0.6 per cent of this was due to infection, not necessarily due to manipulations. The infant mortality was 30 to 60 per cent. In the Queen Charlotte Hospital records in 10,000 labors there were 206 inductions. There was no maternal mortality, but 26 infants did not survive—namely, 12.6 per cent. VonHerff records 120 consecutive prophylactic inductions by rupture of the membranes, with a fetal and infantile mortality of 20 per cent. In four years at the Liverpool Maternity Hospital (1916-1919), of 169 bougie inductions with no maternal mortality 171 children were born, with 25 fetal and neonatal deaths—viz., 14 per cent. Briggs recorded in 1922 a series of 159 conservative bougie inductions in minor degrees of contracted pelvis, or fetal over size, with eight stillbirths and five neonatal deaths — viz., approximately 8 per cent. Briggs regards induction favorably.

Most authorities, in discussing the induc-

tion of premature labor, state that the child requires greater care than a full-time child, and that the ultimate chance of life of the premature infant must be carefully considered. Prophylactic induction is most likely to be successful when pregnancy has advanced to the thirty-sixth week, and the conjugate of the brim measures at least 3½ inches. Some think labor should not be induced in a first pregnancy, but only with the history of previous difficulty or loss of child. The proper time must be determined by estimation of the relation between the size of the pelvis and that of the fetal head, and the operation should be carried out as soon as there is difficulty in pushing the head in (to allow for the reduction for molding). Eden advocates an examination under anesthesia for the measurement of the diagonal conjugate, and the determination of the relative sizes of the head and pelvis.

With any method it may be difficult to excite effective uterine contractions. There is no doubt that in some cases there is a personal idiosyncrasy, as in one of the cases included in their series, in whom, in two consecutive inductions, five days elapsed before labor pains started.

In their series of cases they chose the method considered by Galabin to be the most perfect, viz., the thin rubber bag, which they have employed in the form recommended by Lowry of Belfast—the toy balloon—distended by sterile water. With this method there is less risk of rupturing the membranes than with the bougie, the normally situated placenta is not interfered with, and there is less risk of carrying sepsis into the upper portion of the uterus. The insertion of the hydrostatic bag imitates closely the natural onset of labor and interferes little with its normal progress. The thin toy balloon is easy to insert, and there is no need for preliminary dilatation. If not more than 16 ounces of fluid are used there is no overdistention of the lower uterine segment. With the thin rubber bag there is very little displacement of the presenting part. The balloon can be boiled, so there is less risk of sepsis than with a gum-elastic bougie, which cannot be so efficiently sterilized. It does not project from the vagina, so there is no ladder for the ascent of organisms.

The use of an anesthetic is not a disadvantage. Though not essential it enables the examination to be more completely satisfactory, and a higher degree of asepsis to be obtained, and it helps to remove the principal difficulties in induction of premature labor, namely, the recognition of the case requiring it, and the choice of the correct time.

A general anesthetic is employed. The vagina is douched with 1:2000 biniodide of mercury lotion and the uninflated balloon introduced with bullet forceps through the cervix, which is fixed by means of a modified Collin lung forceps. Sixteen ounces of sterile water are introduced with a piston syringe through tubing tied on a glass tube in the neck of the balloon. The tubing is tied and a gauze pack left in the vagina to keep the tubing from projecting. The balloon and its connections should always be previously tested.

With balloon induction, as with any other method, it is especially necessary to eliminate the possibility of latent sepsis, of gonococcal or streptococcal origin. It is important for the nurse in charge to note whether the head is following the balloon, and if not to push it into the pelvis.

They conclude that by the induction of premature labor in suitable cases a considerable amount of unnecessary suffering from prolonged labor due to minor pelvic contraction may be avoided. In addition, induction of premature labor is not so inimical to the child as published statistics maintain.

Chloroform Anesthesia.

In the *Proceedings of the Royal Society of Medicine* for September, 1925, FAIRLIE states with regard to the period of anesthesia itself there is, of course, no doubt that collapse and death are more frequent with chloroform than with ether. Statistics are provided in plenty to prove this. It is only fair, however, to remember that statistics ignore all personal factors. They include all cases and all administrators. He

thinks if they could be sifted, the vast majority of fatalities would be found to have occurred in those cases in which the relatively inexperienced man was conducting the anesthesia. It is too Utopian to insist that only the specialist should administer anesthetics, but he does think that, when the occasional administrator is called upon to give an anesthetic, his choice should not be chloroform. The views which he expresses regarding chloroform presuppose that it is to be administered by one who has thoroughly studied the subject and appreciated the risks. He does not say that even under those conditions fatalities are impossible, but he believes that they are as infrequent as with any other anesthetic which attains the same profound anesthesia, due regard being paid to all aspects, the post-anesthetic period included.

To turn now to the anesthesia which chloroform produces, there is he thinks a fairly general admission, even on the part of its severest critics, that it is in certain respects superior to that obtained by any other general anesthetic. It is more often possible to get a third stage in which the breathing is quiet, the respiratory excursion small, and the degree of muscular relaxation sufficient: these conditions are seldom attainable with ether. It is, perhaps, not a point of supreme importance in modern surgery, but there are still some operations in which the diminished hemorrhage of a chloroform anesthesia is useful. He does not pretend that in every laparotomy it is possible to produce those ideal conditions. But he does think that on the average it is much more often possible to produce them with chloroform than with ether. Then, in the post-anesthetic period, instead of a patient suffering from reaction after overstimulation, we get one whose blood-pressure is tending upward, and one who will respond to stimulation if it be necessary. In addition, there is less likelihood of chest complications supervening. He says it has been rather the fashion to belittle the irritant action of ether, and certainly ether is less irritating when given by an open method, and after the preliminary administration of atropine, than it was in the old days of closed inhalers, often badly used. Nevertheless, ether bronchitis is a factor to be reckoned with, at any rate in the west of Scotland.

As an offset to those favorable conditions there is the danger associated with the exhibition of chloroform: first, the danger from circulatory failure, and secondly, the danger of acidosis or delayed chloroform poisoning.

It has been the custom of recent years to describe two types of chloroform syncope, one coming on without warning and resulting in almost instantaneous death, the other of a more gradual type. He doubts whether there is any vital distinction. The cardiac failure which occurs in both types is of the same nature, and differs only in the rapidity of its onset. Even the rapidly arriving syncope does give some warning. It requires most careful observation to detect the premonitory symptoms, but, although they are rapid in their sequence, they can be detected, and are practically identical with those which occur in the cases of more gradual onset. The time available for remedial measures is more limited. Every second is valuable, but prompt response to the warning of the symptoms is sufficient to avert danger.

The two symptoms to which he assigns most importance are pallor and dilatation of the pupil. They occur almost simultaneously, and the very first moment at which they appear is the time to take measures. If, at that moment, the operating table be tilted, lowering the head and raising the feet, it is rarely necessary to do more to restore the circulation. The symptoms in question can be detected earlier than a definite weakening of the pulse or change in the respiration, although these quickly follow. It is notorious that this type of syncope is apt to occur early in the administration.

As regards the cause of the syncope, various explanations are offered. Levy, who has made a most valuable investigation into the whole subject, holds the view that it results from ventricular fibrillation, that it is especially liable to occur during light anes-

thesia, and that it is not due to overdosage. He advances the interesting theory that the suprarenal glands are, from varying causes which need not be detailed, stimulated to secrete excessively during the early part of the administration of an anesthetic, and that the resulting combination of adrenalin and chloroform, the danger of which is well known, is responsible for the ventricular fibrillation and resulting syncope. With his conclusion that overdosage plays an insignificant part in the causation of syncope he cannot agree. Although cardiac failure usually occurs early in the administration, he is convinced, from clinical observation, that it results far more often from too much chloroform than from too little. The Special Chloroform Committee of the British Medical Association found that, in certain experiments, "the fatal dose was less than twice the amount required to produce unconsciousness to pain."

The Action of Sparteine Sulphate on the Mammalian Heart.

In the *Journal of Pharmacology and Experimental Therapeutics* for September, 1925, CRAWFORD states that sparteine sulphate causes a decrease in the heart-rate, in the contraction of the auricles and ventricles, in the minute output of the heart, and in blood-pressure. Immediately following an injection in the early stages these may be increased, but this effect is transient. The relaxation of the heart may be increased, but is not usually much altered. Conduction between the auricle and ventricle is prolonged, but heart block is not induced. The vagus is paralyzed.

The action of the drug on the heart is that of a cardiac depressant. This is due to direct action on the tissues of the heart. These changes in the heart play an important part in the alterations observed in the blood-pressure.

Writing in the same *Journal,* Crawford also states that sparteine sulphate in appropriate dosage can cause cessation of auricular fibrillation induced by faradic stimulation of the dog's auricle.

It does this probaby by virtue of its depressant action on heart muscle.

The power of stopping fibrillation of the auricle is not peculiar to one individual drug or group of drugs, but may be common to those drugs which depress the activity of cardiac muscle.

[This research is important because many physicians use sparteine with the idea that it is a cardiac stimulant.—ED.]

The Diuretic Action of Ammonium Chloride and Novasurol in Cases of Nephritis with Edema.

In the *Journal of the American Medical Association* of September 12, 1925, KEITH, BARRIER and WHELAN state that they have previously reported the successful use of ammonium chloride in a case of nephritis with edema. They were led to the substitution of ammonium chloride for calcium chloride chiefly because of the difficulty in administering the latter. In many cases calcium chloride caused nausea and vomiting, while these symptoms were much less frequent and troublesome after the ingestion of ammonium chloride. Gamble, Blackfan and Hamilton, for similar clinical reasons, have administered ammonium sulphate and ammonium chloride to children with nephritis.

Since their first successful use of ammonium chloride, this salt has received a thorough trial in different types of nephritis with edema. In many it produced prompt diuresis, with rapid disappearance of the edema. In others its beneficial effects were temporary and slight. In the latter cases the organic mercury compound novasurol was administered, and as a rule the resulting diuresis was most striking. These results with novasurol were in harmony with the therapeutic effects previously reported by Mühling and Ulrich. The present series of patients, many of whom had had persistent edema for weeks and months, reveals the importance of the application of these newer diuretics to the treatment of nephritic edema.

Ammonium chloride was given by mouth

to eleven patients in this series. The doses ranged from 5 to 16 gm. each day for periods of from three to eighteen days. The largest amount ingested was 162 gm. in a period of eighteen days. Ammonium chloride usually causes a lowering of the alkali reserve of the blood plasma and an increased acidity of the urine. In cases in which the alkali reserve of the blood was decidedly decreased, ammonium chloride was discontinued until the plasma bicarbonate became normal. In only a single instance was a condition of clinical acidosis induced. The result in this case indicates that ammonium chloride should be given with great caution in the presence of severe renal insufficiency.

Novasurol was injected intramuscularly and intravenously in doses of from 0.5 to 2.5 cc. As a rule it produced diuresis. It seemed to be more effective as a diuretic after the patient had taken sufficient ammonium chloride to render the urine decidedly acid. No untoward symptoms were encountered following its use in this series of cases, but a preliminary intramuscular injection of 0.5 cc is always given to observe the effect.

The Use of Fish in the Control of Yellow Fever in Peru.

In *The Military Surgeon* for September, 1925, HANSON and DUNN state that fish were used in many of the early yellow fever campaigns for the destruction of *Aëdes ægypti* larvæ, but nowhere so extensively as in Guayaquil.

They were tried and found very efficacious in Peru in 1921, where they were used on the most extensive scale yet employed and with the most strikingly good results.

The early control methods in Peru consisted in throwing out water that contained larvæ; covering containers; limiting the number of containers and requiring an alternation in their use, so that from time to time each receptacle could be turned upside down and allowed to dry; and finally straining once every week or ten days all the water kept in containers.

The prevailing types of container were tanks, barrels, *botijas* and *tinajas,* with the *botijas* and *tinajas* predominating.

Experiments with fish were begun early in the year 1921 in Chiclayo, where six local species of fish were tried out for their larvicidal properties and adaptability for use as an anti-ægypti measure. Of the six species, two were found to be very satisfactory, the chalquoques and lifes, the latter being the best, most readily available, and generally used. Wherever these were distributed in containers the breeding index promptly fell to well below the index of safety against the spread of yellow fever. Nearly a million of them were used.

Ergot for Hypodermic Use.

In a note on this subject the *Boston Medical and Surgical Journal* of September 24, 1925, states that some of our most valuable drugs are dependent entirely upon the pharmaceutical manufacturer for their reliability. Take ergot as an example. It is not to be expected that all natural specimens will contain the same percentage of active principle, and experience has proved that they do not. The necessity of standardizing ergot preparations has long been apparent, but chemical methods were not available because of the complexity of the active principles. Once it was thought that ergotinic acid was the active principle, but now the less of this an ergot preparation contains the higher it is rated, other things being equal. The alkaloid ergotoxin is very important, but certain amounts of the amines, histamine and tyramine, must also be present.

Since, however, ergot has long been used in medicine for its effect upon the involuntary muscles, the idea occurred to Houghton, of Detroit, in 1895, that an ergot preparation might be tested by administering it to cocks and observing its effect upon the comb, the degree of bluing or blackening produced being taken as an indication of the physiologic action of the specimen.

It is sometimes desirable to administer ergot hypodermically, but the ordinary fluid extracts are not suitable for this purpose.

The Toxic Effect of Certain Alcoholic Beverages for the Kidney of Normal and Naturally Nephropathic Dogs.

In the *Journal of Pharmacology and Experimental Therapeutics* for September, 1925, MacNider states that ethyl alcohol in normal animals in the quantity employed in his experiments is but slightly nephrotoxic.

Naturally nephropathic animals are more susceptible to the toxic effect of the same amount of alcohol than are normal animals.

When normal animals are given an alcoholic distillate obtained from a fermented mixture of corn-meal and sugar or meal and molasses there develops evidence of its nephrotoxic action which is shown functionally by the appearance of large amounts of albumin in the urine and with but slight evidence of any other functional disturbance. The daily output of urine is increased. Histologically the glomerular vessels show a pronounced fatty infiltration.

When naturally nephropathic animals are given a similar distillate they develop an even more marked albuminuria.

Casts are numerous. There is at first an increase in the twenty-four-hour output of urine which is later reduced or an anuria is established.

Associated with the reduction in urine formation there occurs a decrease in the elimination of phenolsulphonephthalein, a retention of both blood urea and non-protein nitrogen and a reduction in the alkali reserve of the blood. Such animals not only show the development of fatty changes in the glomerular vessels, but the epithelium of the tubules shows evidence of injury.

The association in the normal dogs of the acutely developing fatty changes in the glomerular vessels with a marked albuminuria, and an increase in urine formation without other evidence of a functional disturbance, suggests that the condition may be due to an increase in the permeability of the glomerular structure.

The greater toxicity of such distillates for naturally nephropathic animals which is shown functionally by an albuminuria, an initial increase in urine formation which is followed by a reduction or an auria, and by a decrease in the elimination of phenolsulphonephthalein, a retention of blood urea and non-protein nitrogen, and a depletion in the reserve alkali of the blood, has been associated not only with the glomerular injury but with damage to the tubular epithelium.

The toxicity of the distillate from the fermented mixtures is not primarily due to its ethyl alcohol content, but to some other undetermined substance. [It would appear that this research has little bearing on the use of good whisky as the product used is comparable to a home distillate.—Ed.]

Sanocrysin, the New Gold Cure for Tuberculosis.

In the *Journal-Lancet* for September, 1925, Mariette states that K. Secher summarizes the indication for sanocrysin as follows:

All types of pulmonary tuberculosis in either adults or children are suitable for treatment. The dose must be varied according to each case.

In early cases when, according to the table of doses and combined with serum treatment, they can be carried through without danger to the patient.

In the more advanced case the treatment is perilous.

The far advanced case offers little hope for recovery.

It has no value in surgical tuberculosis.

In lupus the temporary results are striking.

It seems then that this limits the field of sanocrysin to the early cases. Also sanocrysin has been in use for less than two years, and, therefore, it is entirely too early to say much about permanent results.

The Trudeau Sanatorium reports 61 per cent of their cases well and working one to ten years following their discharge without sanocrysin. Their report covers mostly early and moderately advanced cases.

Pratt of Boston, who deals with the more advanced case who is too ill to go to the

State Sanatorium at Rutland, reports 56 per cent well and working in one to ten years after discharge.

It is a matter of common record that 90 per cent of the early cases recover under the present-day methods of treatment, and that this occurs without the dangers associated with sanocrysin treatment.

Therefore, Mariette believes that sanocrysin will be proved to have a rather limited field in tuberculous therapy. The final proof must, of course, come from a long period of study and observation, and if there is anything to Moelgaard's method we shall continue to hear of it. If not, it will die the natural death which has been the fate of the scores of tuberculosis cures in the past.

Influence of Sunlight and Artificial Light on Health.

In the *British Medical Journal* of September 12, 1925, in discussing this subject before the Section of Public Medicine of the British Medical Association, DIXON states that those of us who, like himself, are engaged in the treatment of tuberculosis, in localities where the sun's rays are only sparingly available, will appreciate the necessity for some form of artificial light as a substitute. Our knowledge of the effects of heliotherapy only serves to emphasize this need. We have all doubtless experienced the satisfaction of seeing cases of lupus and of bone, joint, and glandular tuberculosis improve considerably as the result of heliotherapy, practiced during a favorable summer, and have perhaps been equally disappointed at the lack of progress, or even retrogression, shown by the same cases during a subsequent prolonged and sunless winter. Fortunately, as a result of the pioneer work undertaken in England by Leonard Hill, Sequeira, Gauvain, and others, our knowledge of the possibilities of treatment by artificial light has been greatly increased.

Dixon's experience of treatment by means of artificial light has been mostly in connection with tuberculosis, by exposing gradually the whole body to the light from short flame carbon arc lamps, consuming 75 amperes. Their installation includes four of these lamps, two being used in a room. Around each pair of lamps it is possible to treat from six to eight ambulatory patients, or two or three recumbent patients. The initial dose, which is determined after exposing small areas of the skin, for varying times, and noting the reaction, as evidenced by the presence of erythema, is usually from ten to fifteen minutes.

Treatment is commenced by exposing the different limbs, and then various aspects of the trunk, until the whole body has been exposed. A complete exposure of the whole body is usually attained in four or five sittings. Their patients wear wooden pattens, a loin cloth, and either an eye-shade or goggles. Irradiation is given usually on alternate days, and a maximum dose of two or two and a half hours may be eventually given with this type of lamp. After irradiation our patients take a shower bath and have a rub down. Many of those attending for "light" treatment are out-patients, and in spite of the fact that they are receiving treatment in a warm atmosphere for two hours, or two and a half hours in some instances, the occurrence of so-called "chills and colds" is rare, even during the winter months.

Pigmentation, which varies in different individuals, is said to be a guide as to progress and prognosis; it has been stated also that the degree of pigmentation is proportionate to the gain in the patient's power of resistance to disease, and has some rough ratio to his progress toward recovery. Whether this is so in every case is doubtful. A certain percentage of patients exposed do not pigment, although their lesion shows progressive, though slower, improvement than occurs in those who pigment well.

In the use of the general (carbon arc) light (short flame) bath for tuberculous lesions, he would not personally in every case discontinue irradiation because of non-pigmentation alone, if the lesion were showing definite progress and the general condition and tone of the patient improving.

Non-pigmenters certainly require more than the usual care in treatment, and the period of exposure must be less than for those who do pigment, if burning is to be avoided.

Pigmentation has been regarded as an autogenous method of protection, and where it occurs satisfactorily increase in exposures may be more frequent, and a longer maximum exposure may be given than should be attempted in the case of non-pigmenters.

Opportunity is afforded in sanatorium and tuberculosis clinic work for the treatment of most varieties of tuberculosis, and in the light department they have treated cases of lupus, adenitis, tuberculous laryngitis, bone and joint tuberculosis, and a few uncomplicated and also associated cases of pulmonary tuberculosis.

Cases of lupus vulgaris in the majority of instances do well, and, like all other tuberculous lesions, the earlier they come under light treatment the better the prospects of recovery. Sequeira, who has had extensive experience in the treatment of this type of case by the carbon arc light bath, claims 70 per cent of permanent cures. Reyn of the Finsen Institute advocates the use of local light treatment, combined with the light bath, and claims 96 per cent of cures as a result.

Results from the treatment of cervical adenitis by the light bath are also good. After an initial and temporary increase in size, many glands become gradually less, and harder, possibly as a result of absorption and fibrosis. On the other hand, large indurated and adherent glands may break down and fluctuate, aspiration and a continuance of light treatment generally giving satisfactory results. The lupoid condition of scars resulting from the breaking down or incision of cervical glands is usually greatly benefited by the light bath.

In many children suffering from the different forms of non-pulmonary tuberculosis, enlargement of the tracheobronchial glands can readily be demonstrated by radiographic examination, and in a certain number of these cases treatment by means of artificial light associated with sanatorium treatment results in the disappearance or a diminution in the size and number of the glands, which is a matter of importance in relation to hilar tuberculosis. The results of treatment in bone and joint tuberculosis by means of the general light bath are good, particularly in children, when treatment is undertaken before the occurrence of abscess and sinus formation. Tuberculous dactylitis, and tuberculosis of the carpus, elbow, ankle, and knee-joints, he has found to respond well to light treatment.

He has not seen such good results in connection with tuberculosis of the hip and sacroiliac joints, or in cases of spinal tuberculosis, but in these instances most of his patients have been cases of extensive and long-standing disease, many of them presenting multiple discharging sinuses. Even amongst these there have been some strikingly good results.

Sugar and Athletics.

In an editorial on this subject, the *Lancet* of September 19, 1925, states that a naïve contribution to the explanation of our habits is recorded by Levine and his colleagues at Harvard. They found last year that some of the runners in a marathon who were particularly exhausted showed an abnormally low blood-sugar and symptoms comparable to those of an overdose of insulin. On further analysis it appeared that exercise such as running first somewhat increases the blood-sugar, but the percentage afterwards drops back to normal, at which it remains until, in some individuals, a further fall appears about the time when they get profoundly tired. On a repetition of the race this year these observers confirmed their findings, and got some of the runners to demonstrate that eating candies was very reviving when exhaustion began to appear. It is interesting to know that physical exhaustion is associated with a low percentage of sugar in the blood, and we are led to wonder whether the same is true of the tired, sleepy state which supervenes when a maximum discharge of adrenalin enables the subject to have a really violent emotion. But the most

curious thing is that neither the authors nor the subjects at Harvard seem to have been aware that the consumption of sugar in one form or another is very widely known as preventive and curative of fatigue. Those who believe that while lump sugar really is sugar and not some artifice of a deceitful manufacturer will take it in that convenient form; others pin their faith on a bull's-eye about the sixteenth hole; a long distance cyclist will start out with a long stick of barley-sugar in his mouth, and gradually incorporate it; sugar cakes are a *sine qua non* at an athletic tea-party. We almost suspect that the Harvard Marathonians have been taking advice about their diet from physiologists—a very dangerous thing to do—instead of from their mothers. However well science may explain diet it is apt to choose it badly, because it neglects the accumulated sum of human prejudices in the field which interests mankind more than anything else.

Medical and Radiological Management of Hyperthyroidism.

In *Minnesota Medicine* for September, 1925, KERN states that mild cases of Basedow's syndrome are curable by purely medical management. But the vast majority need in addition inhibition of thyroid function, either by means of surgery or radiation. The surgeon naturally prefers surgery and the radiotherapist radiation, and both can accomplish the same results.

Patients with moderate toxicity can be treated ambulantly by radiation without interruption of their daily occupation, and will submit to radiation earlier in the course of the disease than to operation. Consequently the course of the disease is shortened, and much invalidism incident to tissue damage before operation is consented to is prevented.

The very toxic cases should have medical management for the first thirty days, during which the special medical factors should be employed and two radiations given. After thirty days most of the patients can be treated ambulantly like the moderately toxic ones, but must not work, and usually need some sedatives.

The outstanding medical factor is iodinization, which reduces temporarily the abnormally high rate of metabolism. It is astounding what benefit 15 to 30 drops of Lugol's solution each twenty-four hours will give. This practice, together with other medical methods, has reduced the surgical mortality in the hands of skilled surgeons to about one per cent where, without it, it was 3 to 4 per cent.

The use of iodine has been revived in recent years after having been "taboo" for about twenty-five years. Iodine in some form or other has been used in the treatment of thyroid diseases for fifteen hundred years or more, empirically, however, and not in the rational and scientific manner as now, for both prophylaxis and cure. Unfortunately, iodine medication is not effective over a longer period than about four to five weeks, but during this time of effectiveness enough thyroid tissue can be put out of commission, by either operation or radiation, to place the case well on the road to recovery.

The amount of radiant energy to be administered depends on the response to treatment in a given case. It should be administered in sufficient amount and repeated enough times to bring the metabolic rate to normal.

The average patient is treated every thirty days with basal metabolic rate-reading preceding each treatment. When the rate nears the normal, which is usually in seventy to ninety days, the patient is observed for about sixty days without radiation. If the rate goes down to normal during this time, all is well; but if it is found that it still has a tendency to be above normal, radiation is repeated, but at longer intervals, until normal values are obtained.

In about 70 per cent of cases a cure is obtained. The other 30 per cent vary in their state of well-being from almost cured to chronic invalidism, depending upon the damage to vital structures from the toxicity of the past, or the complexity of the pluriglandular dysendocrinism with which they are burdened.

Before June, 1924, he used Roentgen radiant energy of moderate wave length, produced by 120 kv. crest, filtered with 0.25 mm. copper and 1 mm. aluminum. The focal skin distance used was 30 centimeters. The amount given was 120 mam. each over the right and left lobe of the thyroid and over the thymus area. This was effectual, but gave marked bronzing of the skin, and in some cases a secondary skin change. Since the above mentioned date he uses the short wave length, produced by 200 kv. crest, filtered through 0.75 mm. copper and 1 mm. aluminum at a focal skin distance of 50 cm. One large field including the neck and thymus area is exposed. The amount is 300 mam. Practically no bronzing takes place and never an erythema. The effectiveness is much greater than by the older technique, and fewer treatments are required even in the resistant cases.

Medical management is essential in practically all hyperthyroid states.

Radiation is an effective adjunct when appropriately applied, has no danger to the skin, and has no mortality.

Patients readily accept radiation if it is offered to them early in the disease, which prevents those profound intoxications from causing permanent tissue changes in vital organs.

Patients should have the benefit of the method as soon as it is known that medical management alone does not suffice.

Kern asserts that under proper medical and radiological management, surgical intervention is almost never an absolute necessity, except in the adenomatous cases.

Quinine and Quinidine.

In an editorial on this subject the *British Medical Journal* of September 12, 1925, states that clinical comparisons of quinine and quinidine is the ninety-sixth of the series of special reports issued by the Medical Research Council; it gives an account of investigations undertaken to determine the relative efficiency of quinine and quinidine in the treatment of malaria. This work was organized by a special committee consisting of Balfour, James, Acton, and Dale. At an early stage in the proceedings Acton returned to India, and the other three members are responsible for the report. The committee sent out specially purified samples of quinine and quinidine to eleven centers in different parts of the world, and drew up a schedule of suggestions designed to secure that each patient of two comparable series received one or other of the alkaloids in the same definite dosage, administered by the same technique and at the same intervals. The supplies and forms were sent out two years ago, and five reports have been received; the most complete is that by Fletcher of the Institute for Medical Research, Kuala Lumpur, Federated Malay States. This report is published in full. The reports altogether deal with about two hundred cases. The chief conclusions drawn by the committee are as follows:

"The conclusion that quinidine is at least as efficacious as quinine is suggested by the results submitted by all the observers. Further, there is no clear evidence of any difference between the two alkaloids in toxicity for the patient. . . . This point, therefore, of the practical equivalence of quinine and quinidine as antimalarial agents may be regarded as definitely settled. On the other hand, the reports provide no evidence at all in favor of Acton's suggestion that the curative actions of these alkaloids are specifically different for the different kinds of malarial parasites. The reports deal with mixed groups of cases, and there is no indication whatever of a preferential action of quinidine on benign tertian or of quinine on subtertian infections."

The committee points out that there is no likelihood of quinidine replacing quinine to any large extent in the treatment of malaria, and suggests that the cardiac action of quinidine may limit its use as an antimalarial remedy. "The real importance of the conclusion reached is that it deposes quinine from the position of unique value which practice and tradition have accorded to it among the cinchona alkaloids." This conclusion is, of course, of great importance, because the combating of malaria with

antimalarial remedies is in the main an economic problem depending very largely upon our ability to produce an efficient antimalarial remedy at a cost low enough to make it available for the poverty-stricken tropical peoples who are the worst sufferers from the disease.

The committee promises further investigations upon the antimalarial action of cinchonine and cinchonidine, and remarks that, if it should be found that these alkaloids also have the same remedial and toxic actions as quinine, then it would be possible to replace quinine by a mixture of the crystallizable cinchona alkaloids, and the problem of cheapening the supply of antimalarial remedies would be greatly simplified.

[Apparently little attention has been paid to the fact that quinidine is an active depressant to the heart muscle as compared to quinine.—Ed.]

After-treatment of the Tuberculous Patient.

In an editorial on this subject, *Northwest Medicine* for September, 1925, states that if the medical profession fully understood that a man who has once had tuberculosis is never the same individual as formerly, and that for the rest of his life he must so adjust matters as to avoid serious strain, there would be more activity in the follow-up care of these cases. Experience obtained from dealing with tuberculous patients teaches there are a few fundamental factors which must be considered in order to help solve this problem. First, every tuberculous patient while under treatment must be instilled with the fact that for the rest of his life he may be only 50 to 75 per cent of his former self and must adjust his activities accordingly. The value of this has been lost by false ideas of the patient, his family, friends, and even the doctor, who look upon a recovery from tuberculosis as from some acute illness. They consider it a self-limited affair from whose menace, having apparently recovered, the patient is forever free. They do not fully realize that in recovered tuberculosis the bacilli are simply walled off, ready again to spring forth at any undue strain, whether it be one or twenty years after recovery. Therefore, the first step is the education of the patient regarding this fundamental fact during the time he is under treatment.

Of next importance in this campaign is the follow-up care or supervision. While some relapse because of the ordinary demands made upon them in making a living, probably the greatest number slip because of false ideas as to their true condition or a gradually developing carelessness. Each community must solve this problem by providing places of employment for these more or less handicapped individuals. But the real great factor is the after-care or supervision by the medical man. The patient may understand his physical limitations and secure suitable work, but unless there is some guiding, restraining hand to aid him, the time will come when he will feel confident and careless, and his tuberculosis again become active. This can be prevented only by having every patient report regularly for examination and advice. The physician who takes a keen interest in tuberculosis appreciates the importance of supervised work, rest, food, habits, etc. The patient seeing such intelligent interest displayed in his case will soon recognize the pecuniary and health value in remaining under adequate medical supervision for an indefinite period of time.

The Fallibility of Serum Treatment of Tetanus.

In the *Journal-Lancet* for September, 1925, Kellogg states that the principal cause of failure in the use of antitetanic serum is due to the lack of recognition of its limitations. We are in no way justified in questioning its usefulness if we are at all cognizant of these limitations. Statistics have shown us that it is of unquestionable value when it is used properly and in early cases, and that the mortality has been reduced over 20 per cent. Its chief value lies, of course, in its use as a prophylactic.

The failure to use it in all cases of wounds in any way contaminated with street dirt would be culpable negligence. Granting that, as a specific cure for the disease, it has fallen far below our expectations, nevertheless the importance of its early use in liberal quantities and properly introduced cannot be doubted.

The Comparative Nutritional Value of White and Whole-wheat Flour.

In the *Archives of Pediatrics* for September, 1925, MOORE and BRODIE state that white mice on a properly balanced diet containing whole-wheat flour increased in weight four times as rapidly as did their brothers on a chemically identical diet in which the whole wheat was replaced by white flour.

Whole wheat improves the appetite so that the mice receiving it consumed twice the food eaten by those on white flour.

The gain in weight per unit of food consumed was doubled by using the whole wheat.

From the standpoint of health and life, whole wheat is incomparably superior. The mice on it were healthy, happy, and contented. Many of those on white flour developed paralysis and three died.

Those on whole wheat had much greater resistance to cold weather.

The fur of the white-flour group became clumped and abnormally oily.

When the white-flour mice were given the whole-wheat diet, they rapidly regained weight, their fur became normal, and they seemed contented, thus furnishing positive, as well as negative, proof of the superiority of whole wheat.

The dietary difference between white and whole-wheat flours is largely a difference in vitamin B. Modern milling removes this necessary food factor.

This experiment demonstrated that the cost of food per gramme of weight gained was 4.9 cents on a diet containing white flour and 3.7 cents on one containing whole wheat. For nutritional purposes, whole-wheat flour is worth nearly twice as much as white flour.

The presentation of facts such as these to parents and teachers wins their support to scientific feeding and will lead, they trust, to healthier and happier future generations.

The Use of Iodine in Goitre.

LAHEY in the *Boston Medical and Surgical Journal* of September 10, 1925, states that he wishes distinctly to stress the point that Lugol's solution is not intended as and is not a cure for exophthalmic goitre, that it is solely a method of preparing patients for operative procedures so that they will endure them more safely and that a lessened number of steps may be employed. Patients are constantly being received who have had Lugol's solution, without permanent effect, for months before coming to the clinic, and they have themselves given Lugol's solution for long periods of time to patients upon whom they have operated for exophthalmic goitre and not removed a sufficient amount of thyroid tissue, with the result that thyroidism has persisted and they have not been cured. This would be the ideal type of patient to treat with Lugol's solution if it would accomplish lasting relief. It has not produced a single cure in any of these patients, who have taken it very conscientiously because of their desire to avoid reoperation, if possible. In no case has it been possible, where thyroidism has persisted, to avoid further operation and extensive removal of the thyroid remnants.

The diagnosis of exophthalmic goitre, when frankly typical, is so simple that it is hardly possible to mistake it. The determination, however, as to the possible presence of thyroid toxicity in a border-line case with no goitre, no exophthalmos and few if any of the typical symptoms of the disease in an obviously neurotic individual has been extremely difficult and uncertain. This uncertain situation has been made distinctly more uncertain now, however, by the fact that a great number of patients of this type now arrive at the clinic after having been upon Lugol's solution for some time, thus complicating further an already difficult situation and often necessitating sending

the patient home to return for diagnosis after Lugol's solution has been omitted for some weeks.

He urges, therefore, that Lugol's solution be not administered to patients suspected of thyroidism until the diagnosis has been proven by critical clinical and basal metabolic studies.

He further urges, if operation is to be undertaken upon a patient with exophthalmic goitre, that he be sent to the surgeon who is to operate upon him or her, not having had Lugol's solution, for two reasons: one, in order that Lugol's solution may be given under the observation of the person or persons who are to do the operation, and two, that they may thus be aware of the patient's condition before Lugol's solution is given and also the degree of benefit obtained from its use, permitting them in this way to make valuable clinical observations as to the possible need of a divided stage operative procedure in those cases dangerously toxic before Lugol's administration and not markedly improved after its employment. While Lugol's solution is of surpassing value in eliminating the necessity of multiple stage procedures, it must not for a moment be considered that every patient who has been prepared with Lugol's solution can safely withstand a subtotal thyroidectomy in one stage.

Modifications which Have Been Wrought on the Treatment of Pulmonary Tuberculosis During the Last Twenty-five Years.

In the *Journal of Radiology* for September, 1925, GIBSON states that all treatments of pulmonary tuberculosis must be an addition or added to the foundation basis of rest, diet, sunlight, and fresh air.

Compression of the lung can be added as the most effective agent in the treatment of many dangerous cases of tuberculosis.

The antistreptococcic serums can be used to great advantage in tuberculous cases complicated with mixed infection.

Electricity in its various forms, actinic rays and mechanical vibrations can be used for special purposes and as general tonics in the treatment of tuberculosis.

X-rays, as demonstrated by Gibson of Denver and Bacmeister and Rickmann of Freiburg, Germany, promise the most certain and definite cure or relief in cases of pulmonary tuberculosis when managed efficiently and supported by the other well-known measures for the relief of this condition.

Trifacial Neuralgia With Special Reference to the Use of Alcoholic Injections.

In *Southern Medicine and Surgery* for September, 1925, GIBBON states that the treatment of trifacial neuralgia has long been relegated to the surgeon, medical treatment at the outset being hopelessly inadequate. Surgery has gone through many phases in the evolution of our present-day method of dealing with what Coughlin has called this "prince of pains." Albinus and Galen in despair suggested nerve division; however, the first record of it is by Schlichting, in 1748. But the severed ends united and various methods have been resorted to in order to prevent such reunion. Klein in 1822 crushed and cauterized the divided ends. Malgaigne split them and folded them back. And finally Delpech said that nothing could prevent them uniting. Then Roux suggested that sections be removed and these were made longer and longer until entire branches were twisted and torn away —in vain; the pain returned. Nerve stretching was tried for a time with no better results.

Operations not directed against the nerve itself are countless. Removal of Meckel's ganglion, ligation of the common carotid, ablation of the cervical sympathetic ganglia, operations on the eye, the nose and accessory sinuses, tonsils, gums and teeth, have all been tried and found wanting. Of all the futile operations, that receiving most condemnation, and the one, strangely enough, most widely resorted to, is the ex-

traction of teeth—not one but frequently all.

Of all the means and methods of treating trifacial neuralgia, only two are worth considering to-day. The one is the radical operation of division of the sensory root of the ganglion within the skull, conceived by Spiller, and first done by Frazier, about twenty years ago. The other, the deep alcoholic injection of the nerve sheath as it leaves the skull, is only palliative. Of the former Gibbons has nothing to say in this short paper. Of the latter there are certain features which he wishes to emphasize.

Alcoholic injection into the nerve sheath will bestow immunity from pain positively and certainly for periods averaging seven months to one year. This is indicated in the reports of Frazier, of Adson at the Mayo Clinic, of Coughlin at St. Louis, and numerous other authors. Much longer periods of relief are also noted. Let no one consider that this procedure is not without considerable risk. The literature is full of mishaps. In injecting the third division, for example, the Eustachian tube may be entered. A too deep penetration for the second division may perforate the nose or floor of the orbit. Injection of the first division is fraught with great danger and is practically discarded, peripheral avulsion being the method of choice. But if the risks are known, and all precautions are taken, the nerves may be injected just after they leave the skull. There are risks in every field of surgery, and it is only through a consciousness and knowledge of what these are that they are avoided. So it is in the present case.

Now as to the success of the injections. In the first place the diagnosis must be correct. Injection of the trigeminal nerve will certainly not influence the pain in any one of the other forms of neuralgias. Secondly, the alcohol must be injected in the nerve sheath or in close proximity to the nerve. When the needle reaches the nerve area the patient will likely experience painful sensations in the area of distribution. Finally the complete success of the injection is at once proclaimed by anesthesia of the skin in the area of distribution. If this is not present, the injection has failed, and the patient will have naturally no lasting relief. Some of the alcohol may, even if injected some distance, trickle to the neighborhood of the nerve and cause a brief relief from the pain.

Further Observations on the Administration of Dochez's Scarlatinal Antitoxin.

THENEBE in the *Boston Medical and Surgical Journal* of September 10, 1925, reports that of the 42 patients to whom scarlatinal antitoxin was administered, 32 (or 76 per cent) received intravenous injections and 10 (24 per cent) received intramuscular injections. There was no mortality.

No patient to whom unconcentrated scarlatinal antitoxin was administered intravenously developed a chill. Seven (16.7 per cent) of the 42 patients developed a chill, five (15.6 per cent) of whom received concentrated antitoxin intravenously and two (20 per cent) received concentrated and unconcentrated antitoxin respectively intramuscularly. The latter two patients were both sensitized to horse serum when the injection of antitoxin was made.

Fifteen (35.7 per cent) of the 42 patients developed a serum rash, eight of these having serum administered intravenously and seven intramuscularly. The serum sickness was in some instances extremely severe. The amount of antitoxin injected and whether the same is concentrated or unconcentrated seems to have no bearing on the appearance of the serum rash.

Of the 42 patients to whom antitoxin was administered, five (11.9 per cent) presented visible complications after antitoxin administration; six (14.2 per cent) presented visible complications at the initial entrance physical examination before the antitoxin administration. Antitoxin administered to patients before the expiration of eight hours after the appearance of the rash presented no complications, unless complications were present before the anti-

toxin administration. Too much stress apparently cannot be laid upon this fact, that the earlier the antitoxin is administered the less likelihood there is for a complication to develop.

The use of concentrated antitoxin was abandoned for intravenous administration because of the incidence of the severe chill. The amount of antitoxin injected apparently had nothing to do with the appearance of the chill. Of course, it is a safer procedure to determine individual sensitivity to horse serum before administering antitoxin intravenously; but it seems that the immediate maximum concentration of antitoxin in the blood stream obtained by intravenous administration should offset the untoward effects in many instances. Intravenous administration of antitoxin causes a more prompt fall in temperature than intramuscular administration.

The dosage of scarlatinal antitoxin should depend upon the age or size of the patient, the severity of infection, the method of administration and the content of antitoxin in the serum. Better results are obtained with larger doses than with small doses in preventing complications; in other words, an excess of antitoxin in the blood stream is desirable. A complication is not prevented if the complication is present before the administration of the antitoxin. If the dose of antitoxin is not adequate one would expect a complication to develop just as it would without the antitoxin administration.

A definite statement in regard to determining whether or not complications subside more rapidly in patients to whom antitoxin has been administered or not administered is difficult to ascertain, because the virulence of the infection and the resistance of the patient is not determined prior to the injection, unless the toxemia and severity of the symptoms and physical signs can be taken as an index of the resistance of the patient and the virulence of the infection.

The question of shortening the period of hospitalization for the patient treated with scarlatinal antitoxin arises frequently. It seems reasonable that this period should be shortened depending upon the individual clinical picture of the patient. But, as with the carrier of the virulent bacillus of diphtheria, should it not with scarlet fever depend upon the absence of the specific streptococcus hemolyticus, as well as the clinical picture? From a practical standpoint the future may make this procedure possible and feasible.

The possibility of bactericidal properties of scarlatinal antitoxin would be difficult to prove, as the antitoxin probably represents just what its name implies, *i.e.*, antitoxin. Further study will be necessary for any definite conclusions.

He concludes that unconcentrated antitoxin is the safer procedure for intravenous administration.

Concentrated antitoxin is a safer procedure for intramuscular administration.

The earlier the antitoxin is administered, the dosage being adequate, the less the incidence of complications.

Intravenous scarlatinal antitoxin causes the earliest fall in temperature.

The quantity of antitoxin administered does not seem to affect the incidence of a chill or the development of a serum rash.

Further study is necessary to prove the presence of bactericidal properties of the antitoxin; the serum probably represents an antitoxin only.

The Use of Novasurol as a Diuretic.

In *Minnesota Medicine* for September, 1925, OERTING states that novasurol was originally introduced to the medical profession as an antisyphilitic. Later it was noted by Poelcher and Saxl that cases of aortic regurgitation with marked decompensation rapidly became edema-free under novasurol, although all the known diuretics had previously been used without any appreciable effect. This finding was the beginning of a study of the drug as to its diuretic properties, and about nine months ago he began to collect a series of cases for study.

Novasurol is the double salt of sodium

oxymercuri - o - chlorphenoxylacetate with diethylbarbituric acid and contains 33.9 per cent of mercury in a complex non-ionizable combination.

The drug is furnished in a 10-per-cent neutral sterile solution and may be given either intravenously or intramuscularly. From his experience there is nothing to be gained by the intravenous method and it has decided disadvantages. He believes that there is altogether too much promiscuous intravenous therapy, and unless there is a valid reason for the intravenous route it is far better to choose some other method of medication.

The dose of novasurol varies from 0.5 cc to 3 cc, and the interval between injections varies from three to seven days, according to the results and reactions obtained.

The physiological action of this drug is little understood and the literature gives but a scant suggestion as to how it acts. One theory advanced is that in part at least there is a direct action upon the tissues of the body with the extraction of H_2O and NaCl from their colloidal combination; another that it acts directly on the tubular elements of the kidneys, thus increasing the elimination of fluid. Keith and Whelan have shown that novasurol produces an increased excretion of sodium and chlorine in the urine, but are unable to say whether this specific reaction is due to its action on the kidneys alone or on both kidneys and tissues generally. Clinical experience, however, teaches us that the kidneys must have functional activity. The diuretic effect begins about two hours following the injection and continues from twelve to twenty-four hours.

Novasurol is especially indicated in decompensated cardiac cases, and it produces results where a faithful trial of all the ordinary diuretics has failed. Cardiorenal cases with a fair functional activity respond readily. The drug is also recommended in the treatment of the edema and ascites due to cirrhosis of the liver, carcinoma, pleural effusions, and tuberculosis.

Absolute contraindications are renal edema, nephritis, and enteritis.

Too large a dose, or even a small dose in susceptible individuals, may bring on headache, vertigo, nausea, vomiting, stomatitis, diarrhea, febrile reactions, and scarlatinal eruptions. In his experience the only reaction of any consequence is the diarrhea, and this may assume distressing proportions, going on to a stage of acute colitis with mucus, blood, and extreme tenesmus. Fortunately, the condition is quite readily controlled with bismuth and paregoric.

Provocative Reactions in Primary Syphilis.

In the *United States Naval Medical Bulletin* for September-October, 1925, COOPER states that many cases of primary syphilis are seen which are of too short duration for a positive complement fixation reaction and in which the dark-field findings are negative, even after a thorough search. In this class of cases it is questionable whether it is to the best interests of the patient to wait for positive dark-field findings or a Wassermann test. This is especially so if a suspicious sore exists with induration, lack of pain, adenopathy, and other cardinal symptoms of chancre. It seems that it would be better preventive medicine to explain to the patient the benefits to be derived from early treatment, with a view to instituting measures to combat the disease as early as possible, and to keep the amount of systemic involvement at the lowest possible point. This can be done by giving a small amount of neosalvarsan immediately, at the same time taking advantage of any provocative effect by examing the blood and dark-field preparations again in twelve to eighteen hours after the drug. If they are still negative, no harm has been done, and if the chancre begins to clear up while waiting for positive blood findings this in itself is a good therapeutic test. The percentage is in favor of our finding a positive chancre-serum Wassermann, which is enough evidence of syphilitic infection to warrant the administration of salvarsan, or neosalvarsan.

The argument of some syphilologists that

the spirocheticide should not be given until the patient has developed secondaries and consequent resistance to the infection does not appeal to him after watching the result of many badly treated and untreated syphilitics.

The Effect of Phenobarbital (Luminal) on Blood-pressure in Arterial Hypertension.

In the *Archives of Internal Medicine* for September, 1925, GRUBER, SHACKELFORD and ECKLUND state that phenobarbital decreased the arterial blood-pressure in 85 per cent of their cases of hypertension in which it was used.

It appears to become less and less effective in most instances on prolonged administration.

It has the same effect on both ambulatory and hospital patients.

In moderate doses it has probably no harmful effect on the kidney tissues nor on the phenolsulphonephthalein excretion. Immediately with the fall in blood-pressure the phenolsulphonephthalein excretion is increased, but later, in some instances, its elimination is diminished. The elimination again returns to its original level after withdrawal of the drug.

It produces marked toxic symptoms in large doses and therefore should not be prescribed indiscriminately.

A Clinical Study of Diabetic Coma.

PAYNE and POULTON in the *Lancet* of September 26, 1925, state that Blum has pointed out that patients who have been treated with insulin may pass rapidly into coma if insulin is suddenly stopped. The explanation is that owing to the insulin such patients have put on much weight in the form of fat. As fat is the chief source of ketone bodies, the latter are immediately formed in large quantity if the carbohydrate metabolism is suddenly interfered with by omitting insulin. As a contrast the case may be cited of a man, aged fifty-four, seen in consultation before the insulin days. As the result of four years of diabetes he had been reduced to a mere skeleton. The urine gave a very faint Rothera reaction four days before his death, which was not from coma, but rather from inanition. The ketosis was presumably absent because the body fat had practically disappeared. The elderly patient with diabetes is not in danger of diabetic coma, and such people are able to take a course of insulin treatment and obtain the full benefit from it, and they may then omit insulin when they like.

The risk that acute infection may precipitate coma has long been known. Out of ten of their cases where the notes are complete, a history of acute infection immediately preceding the coma was obtained in no less than seven, and this took the form of "sore throat," "cold," "chill," or "temperature." It is thus obviously of great importance to protect patients with diabetes from acute catarrhal infections of the respiratory mucous membranes by means of face masks made of butter muslin, by Glegg's paraffin and vaselin treatment, by prophylactic vaccination, etc. If infection occurs the insulin must be continued, and if glycosuria and ketosis supervene the dose should be increased and extra carbohydrates should be given for the time being. The bowels should be kept open and plenty of fluid should be taken by the mouth.

Their general views on the treatment of diabetic coma have been previously given, so that a brief summary is all that is necessary at present. Massive doses of insulin (20-40 units) are given every four hours, and at the beginning an intravenous injection of 10-20 units may be given if the case is urgent. The frequency of urea retention makes it important to give large volumes of fluid, so as to keep up the flow of urine. It is hardly ever necessary to give an intravenous injection of fluid because the latter can be absorbed rapidly and in larger quantity from the alimentary canal. If the patient cannot take one pint of fluid every hour by mouth, it should be passed directly into the stomach or duo-

denum through a nasal or Einhorn tube, with the patient lying on the right side. The fluid should be isotonic, sugar, sodium bicarbonate, and a little salt being dissolved in tap water. A more accurate prescription is as follows: Dextrose 3 per cent, sodii bicarb. 0.5 per cent, potassium chloride 0.05 per cent, and calcium chloride 0.03 per cent.

A lookout must be kept on the bases of the lungs to see that edema does not develop. The rapidity with which energetic treatment with insulin may cause diabetic coma to pass into hypoglycemia coma without the patient recovering consciousness in between has been pointed out by Graham and by one of the authors of this paper, and is illustrated by one of their cases. In the absence of blood-sugar examinations, at frequent intervals, the plan of testing the urine at two-hourly intervals has been advocated, so that the administration of insulin may be temporarily stopped as soon as the urine is sugar-free and only continued again when sugar returns. Such a plan would have failed in two of their cases, because the urine did not contain sugar even though the blood-sugar was high. It would be better to take account also of the ketone bodies of the urine by means of Rothera's and the $FeCl_3$ tests, because in hypoglycemia both sugar and ketone bodies disappear from the urine; but even this plan would not have answered in their two fatal cases. Undoubtedly the safest plan is to continue giving sugar by mouth at frequent intervals until an abundant flow of urine is definitely established, and when this is the case sugar and ketone bodies will no longer be retained by the kidneys, and the urine will give a true index of the amount of hyperglycemia and ketones in the body. The fluid intake may then be diminished and the sugar omitted, and the insulin should then be continued until the urine is sugar-free from ketones when tested at two-hourly intervals.

In summarizing their paper, they state that they report (1) Eleven cases of diabetic coma as well as certain cases reviewed from current literature. (2) A definite renal element, as shown by oliguria, albuminuria, and urea retention and failure to excrete ketone bodies, and occasionally sugar, is present. (3) In some cases this renal failure is so decided as to cause a marked resemblance to uremic coma. (4) The cause of the renal failure has been discussed. (5) The treatment is carried out by means of large injections of insulin, and by the administration of much fluid, containing dextrose, by the mouth.

The Value of Iron in Anemia.

In the *Archives of Internal Medicine* for September, 1925, WILLIAMSON and ETS state that inorganic iron, whether given by mouth, subcutaneously, or intravenously, is absorbed and may be found especially in the liver and spleen, but is not converted into hemoglobin.

Animals made anemic by one or several large bleedings do not recover any more rapidly when inorganic iron is given in any of these ways.

The efficiency of food iron is very pronounced, and animals on a diet containing food iron only recover very rapidly from hemorrhages that remove an amount of iron greater than exists in the entire body outside the blood.

In the light of the foregoing experiments, they conclude the administration of inorganic iron has no therapeutic value in anemia.

[But anemia induced by sudden bleeding does not necessarily resemble that which gradually develops.—ED.]

Syphilis of the Heart and Aorta.

In *Northwest Medicine* for September, 1925, HERRICK states that the treatment of aortitis corrects, if it does not cure, the valvular lesion. Salvarsan, given in cerebral and cardiac affections, causes in some instances death. In beginning treatment, moderate doses of mercury and potassium iodide should be used and gradually increased. Then small doses of salvarsan.

Many disregard all precautions and begin extensive treatment, practically disregarding the cardiac condition. Many clinicians also state that aortitis is among the curable diseases. It would seem that the small initial dose of arsphenamin with gradual increase gives the best result. Early recognition and early treatment is the aim of all clinicians in order to get fewer aneurisms, fewer cardiac lesions and fewer coronary obstructions in the future.

Blood Transfusion.

HERR, in the *Boston Medical and Surgical Journal* of October 15, 1925, reminds us that the methods of transfusion are classified into: (*A*) Modified, and (*B*) Unmodified; the latter into (1) direct, and (2) indirect.

Of the modified method the one as used by Lewisohn is most generally accepted. In his technique a very simple apparatus is necessary, which commends it for use by any general practitioner of average skill. Its advantages are simple technique, ease of execution, and the ability of transporting blood from a donor to a recipient at a distance. Its disadvantages consist of clotting of blood in the needles or cannulas, the difficulty of obtaining uniform mixture, the frequent formation of clots in gravity apparatus, the necessity of filtering mixture to avoid clots, the danger of contamination by exposure to the air, and, most important, the destruction by the citrate solution of the blood platelets which are necessary for maintaining the blood at its highest efficiency. Many of these difficulties can be overcome by the use of the Hoffman and Habein or the Brines closed method apparatus.

The action of sodium citrate on the blood has been demonstrated in several ways: (1) It destroys the blood platelets whose function is necessary for coagulation. This method would therefore not be indicated to control hemorrhage. (2) Sodium citrate added to whole blood in amounts necessary to prevent coagulation alters the red cells in such a way as to give off anticomplementary properties into the plasma. It furthermore destroys complement directly and reduces the phagocytic and opsonic powers of the blood. It should, therefore, not be used in general infections where a resisting power is sought. (3) Sodium citrate increases the friability of the erythrocytes, which is not favorable in the anemias.

Of the unmodified blood the only direct method is the artery to vein or vein to vein anastomosis, and on this method he believes there is no need for comment. Of the unmodified indirect methods, three are in use at the present time: (1) the Lindemann; (2) Kimpton-Brown tubes; and (3) the Unger; which he takes up in the order named.

In the Lindemann syringe method three to five 20-cc syringes are used. Blood is drawn by syringe-needle method from donor and the syringe passed to assistant, who injects the blood into the recipient's vein. A nurse rinses the syringes in the three consecutive basins of saline solution; the last should remain clear of blood. The syringes are passed to the operator in rotation. The disadvantages of this method are clotting in the needles, loss of time in changing syringes, and the number of assistants required.

The paraffin tube method of Kimpton-Brown requires an incision in the vein for insertion of a glass nipple in the tube which is filled by *vis a tergo* in the vein. The tube filled with blood is now transferred to the recipient and transfused through the incision in the vein. Its chief advantage is that here whole undiluted blood is used, but it has the disadvantages of incising the vessels and requiring considerable skill to line the tubes with paraffin in order to prevent coagulation. It is, however, a true whole-blood transfusion and an excellent method.

In the Unger unmodified, indirect method, the apparatus consists of a four-way swivel, a Record and a Luer syringe, two Unger needles, and some small caliber rubber tubing. With the swivel turned toward the donor the Record syringe is drawn full of blood. The swivel is now turned toward the recipient and blood injected into the

recipient. The assistant with the Luer syringe constantly injects saline solution in the opposite direction, thereby keeping the tubing clean and free. Ether is constantly sprayed on the Record syringe to prevent clotting and overheating of blood.

This method possesses the advantages of using whole blood, it is speedy, blood does not come in contact with the air, and a small corps is required. It can be performed at the bedside and the vessels are not injured. The latter advantage is important if more than one transfusion is to be performed on the recipient. It furthermore does not destroy the platelets and it permanently shortens the coagulation time, which is an all-important factor in the control of hemorrhage.

Autotransfusion or the replacing of free blood in the peritoneal cavity following abdominal hemorrhage is merely increasing the load of the already overtaxed absorption powers of the peritoneum. The life of the red cell, once removed from the blood stream, ceases. Furthermore if, as is necessary, we filter the blood, we remove thereby most of the erythrocytes, and it is doubtful if the remaining red cells are ever absorbed through the peritoneum as useful cells. A better method is to remove all clots and thereby put the peritoneum at rest, and if necessary give a whole-blood transfusion.

Transfusion by the intergluteal method of defibrinated or non-defibrinated blood by giving repeated injections of 15 to 20 cc has been used. It is doubtful if sufficient blood is given by this method to be of great service to the patient.

Intraperitoneal transfusion of whole blood by the syringe method in infants has been advocated by some. Experiments on healthy animals have shown that the blood was absorbed through the peritoneum. On the other hand autopsies performed on the bodies of three infants three days after intraperitoneal transfusion had been done showed the blood in an unchanged state.

Transfusion in infants is most readily performed by the superior longitudinal sinus: The child is wrapped in a blanket; the head need not be shaved. Either the anterior or the posterior angle of the anterior fontanelle is palpated with the index-finger, and a short, large caliber needle inserted until the same feeling is experienced as is met with in penetrating the dura in a spinal puncture; 50 to 150 cc of blood are transfused.

Herr believes that the field of indications for transfusion is continually broadening. In hemorrhage from fibroids, abortion, post-partum, postoperative and from ruptured tubal pregnancies, duodenal, gastric or typhoid ulcers, and pulmonary origin, it is a decisive factor. With a hemoglobin of 20 per cent transfusion is imperative. When the hemoglobin remains between 20 and 30 per cent for any length of time transfusion is indicated. A hemoglobin of 40 per cent is sufficient to carry on oxidation in a patient at rest in bed.

In preparing a patient for a serious operation transfusion will transform an otherwise hazardous risk into a safe procedure. In surgical shock, whether postoperative or of traumatic origin, it is a valuable weapon of defence. Here the lowered blood-pressure is the indication, and the amount to be transfused is the amount required to raise the blood-pressure to normal. In gas poisoning and in anuria "repeated venesection" has been successful. In puerperal infection whole-blood transfusions diluted with Ringer's solution is the treatment of choice. In severe septicemia without loss of blood simple transfusion is of less value because normal blood possesses fewer protective antibodies than infected blood. Here immunization with 1000 millions of stock bacterin or with an autogenous vaccine has given satisfactory results. To arrest hemorrhage transfusion will succeed when all other coagulants have failed, and it is the method *par excellence.* To raise the blood count 1,000,000 red cells it is necessary to transfuse 15 cm. of blood for every kilogram of body weight of the recipient.

From the medical standpoint it has proved of value in malnutrition of infancy and pernicious anemia of adolescence, and has frequently saved otherwise hopeless cases of

nephritis, typhoid, and pneumonia. In carcinoma from any cause it is of assistance in the prolongation of life and is a valuable adjunct in cases in which surgery or radiation is indicated. It is useful in all cases of hemophilia and hemorrhagic diathesis and in the anemia of pulmonary tuberculosis.

The Treatment of Postoperative Pulmonary Complications.

In the *Lancet* of October 10, 1925, EDEN emphasizes the point that when abnormal physical signs are detected in the lungs soon after an operation it is usually taken for granted that a postoperative complication has occurred, and usually the anesthetic is blamed for the so-called "pneumonia" or "bronchopneumonia." But a careful examination of the lungs in a large proportion of acute abdominal cases will reveal definite abnormal physical signs before operation. Unless these are detected, it is difficult to appreciate the significance of any pulmonary change that may be found after operation, especially as very similar signs may result from a purely postoperative condition. Briefly, these signs (which are nearly always confined to the right lung) are increase of size in the right half of the chest, raising of the liver dulness in the nipple line to the fifth rib or fourth space, impairment of percussion note, and diminution of breath-sounds (which are never definitely bronchial) over the base of the right lung, especially at a point one and a half inches below and to the left of the angle of the scapula; the apex beat is in the normal situation. By means of *x*-ray screening the right half of the diaphragm is seen to be raised and its range of movement limited, though what movement there is appears to be an active one. These signs are always present and occur at a very early stage when there is inflammation of the peritoneum in the upper abdomen, but with diminishing frequency as the inflammation is situated further from the diaphragm. They are constantly present in retrocecal appendicitis and when suppurative peritonitis is spreading up from the pelvis, and occur in cholecystitis and perinephritis; but they are absent in pyelitis, cholelithiasis unaccompanied by cholecystitis, all forms of colic, tuberculous peritonitis, salpingitis, unless there is a spreading peritonitis, in appendicitis confined to the pelvis, and in pneumonia or diaphragmatic pleurisy. The measurement of the chest is conveniently taken with a saddle tape measure placed just below the nipples in males and below the breasts in females. The difference is often as much as one and a half inches, but an increase of only half an inch may be regarded as pathological. Obvious fallacies are spinal curvature or old lung disease.

The explanation of these signs is not difficult; just as impaired movement of the anterior abdominal wall is an early sign of peritonitis, so is impaired action of the diaphragm. The latter is not inactive, but its excursion is limited, and what movement remains is apparently able to aerate the lung sufficiently to prevent any great degree of collapse. The liver rises in consequence of the partial collapse of the lung, and by its shape causes an enlargement of the right side of the chest. The treatment is, of course, mainly surgical, but after operation the patient should be encouraged to breathe deeply, but not allowed to remain too long in one position, as there is danger of hypostatic congestion. For the same reason he should be placed in Fowler's position, to avoid as far as possible the pressure of the liver against the diaphragm. Expectorants also help to avoid congestion of the lung base.

There are two forms of postoperative massive lobar collapse: (*a*) collapse with contraction, and (*b*) collapse with enlargement of the corresponding side of the chest wall.

The first symptom of collapse with contraction is usually sudden pain low down in one side of the chest (usually the right); the temperature rises to 102° or 103° F.; respiration quickens and there is some distress, which may be acute; after a few hours expectoration of white viscid sputum begins. The physical signs are impaired movement of the affected side of the chest

and upper quadrant of the abdominal wall, impaired percussion note, at first diminution or absence of breath sounds over the lower lobe of the lung, and later well-marked tubular breathing; displacement of the heart toward the affected side, diminution in girth of this side of the chest, inactivity of the diaphragm and upward displacement of the liver, if the collapse is on the right side, or heart if on the left. The liver dulness may begin as high as the fourth rib, and this upward displacement is a most valuable sign, easy to demonstrate, and constantly present. On screening he has always found the cupola of the diaphragm raised on the side of the collapse and the movement either absent or much restrained, so that the excursion is small and jerky, suggesting tonic contraction.

Massive collapse is easily distinguished from postoperative pneumonia by the displacement of the heart and liver, the decrease in size of the affected half of the chest, the viscid white sputum which is never blood-stained or rusty, and the termination which may be as sudden as the crisis of lobar pneumonia, but followed by a much more rapid return of the normal signs of a healthy lung. There is no flush and the skin is usually moist, and has not the hot dry feeling so often present in pneumonia. The change usually occurs on the third day after the onset of the collapse; the temperature drops to normal or thereabouts, the pain disappears, and the only remaining symptom is the coughing up of the characteristic sputum for another few days. At the same time the diaphragm begins to move in normal fashion.

In certain cases the change is dramatic in its suddenness, which suggests a mechanical cause rather than a pathological change in the lung tissue. The apparent tonic contraction of the diaphragm and the sudden onset closely resemble an attack of asthma, in which condition we also find a rigid (though not raised) diaphragm, which immediately begins to move on cessation of the attack. The similarity has led him to try drugs used to alleviate asthma, and he has found injections of 5 minims of a 1:1000 solution of adrenalin the most useful remedy, not only for the treatment of massive collapse, but when given as a prophylactic it seems to lessen the chances of this complication ensuing. It is better to give 5 minims repeatedly than to give larger doses at longer intervals. A second dose may be usefully given in half an hour's time. As a prophylactic 5 minims may be given every six hours for the first forty-eight hours after operation. Other drugs which are helpful are injections of ½ cc of pituitary extract, or ⅓ grain of emetine hydrochloride. In addition, small doses of potassium iodide and ammonium carbonate with a few minims of ipecacuanha wine, made into a mixture with camphor water, help to liquefy the viscid sputum and so assist its expectoration. Many patients have benefited from the application of a mustard leaf to the side of the neck, which was done with the idea of providing counter-irritation to the phrenic nerve, and with a similar object he has found it of some use to pass a descending constant current down the side of the neck. This form of massive collapse is an alarming complication, but unless pneumonia supervenes (and this happens but rarely) is never by itself fatal.

Glucose Infusions and Insulin in the Preparation of Poor Surgical Risks.

In the *Boston Medical and Surgical Journal* of October 15, 1925, FISHER and MENSING state that a sterile solution of C. P. glucose is used of ten to fifteen per cent strength, and 500 to 1000 cc may be given, depending upon the severity of the case to be treated. Any intravenous apparatus can be employed. A good one is that described by Thalhimer. The usual precautions for any intravenous therapy are taken. The solution is allowed to flow into the veins at a very slow rate so that the entire time of administration is at least 90 minutes; the longer the better. This is very important, for dilatation of the heart is a real danger when rapid administration takes place. The amount of insulin to be

given depends upon the amount of glucose given. For every two grammes of glucose injected they give one unit of U20 insulin. The total amount of insulin to be given having been estimated, one-half of this amount is then injected subcutaneously when one-third of the total glucose solution has entered the veins, and the remainder of the insulin is given after the administration of the glucose has been completed. It is well for the nurse to have at hand a hypodermic syringe containing one cc of adrenalin as a precaution should an insulin reaction develop. Every specimen of urine passed should be examined separately, and the early ones should show the presence of glucose, thereby acting as a safety indicator on the amount of insulin given. This means that there is more glucose present in the blood stream than can be taken care of by the introduced insulin. This glucose can be made to disappear from the urine by the addition of a small amount of insulin. Where possible, frequent blood-sugar determinations should be made to ascertain any further amount of insulin to be given. By this method, in a large number of glucose infusions and insulin, they have not had a single untoward reaction either from the insulin or the glucose.

Where the time element is an important factor, this treatment can be given during the course of the operation with just as favorable results. The method is very simple, no complicated or expensive apparatus is necessary, and it can be carried out by the family physician while awaiting the consultant and the preparation of the operating room.

They do not desire to leave the impression that insulin and glucose are a panacea for all preoperative evils. It will not supplant blood transfusion in shock due to great loss of blood, but where no blood is available it is an exceedingly valuable substitute.

They conclude that glucose infusions and insulin administered before operation in acute surgical conditions complicated by acidosis, shock, or incessant vomiting, greatly diminish the operative risk and mortality, and transform a poor surgical risk into a fair or good risk.

In general routine cases, particularly in gastric and gastrointestinal conditions with or without inanition, glucose infusions and insulin have a remarkably invigorating effect, and greatly increase the operative percentage of safety.

Glucose and insulin are indicated in those cases that are in good preoperative condition, but who are to undergo a serious operation in which some difficulty is anticipated.

The Influence of the Adrenals on the Toxicity of Morphine.

In the *Journal of Pharmacology and Experimental Therapeutics* for October, 1925, ROGOFF and DENECKER state that there is no foundation for the statement that double adrenalectomy in rats causes them to become 400 to 500 times more sensitive to morphine than normal animals. There is, indeed, no evidence that any significant change in tolerance occurs.

Most of the deaths, resulting from double adrenalectomy in rats, occur within a period of about ten days, beginning toward the end of the first week following the operation.

Tests for tolerance of depressing drugs or potent bacterial toxins cannot yield reliable results if made during this period of high mortality in adrenalectomized rats.

Rheumatoid Arthritis.

The *British Medical Journal* of October 10, 1925, in an editorial on this subject, states the field of discussion in the Section of Therapeutics of the British Medical Association, although it was nominally confined to the treatment of chronic arthritis, dealt in fact with its pathology as well, and Sir Thomas Horder, who opened it, included in his tabular statement chronic arthritis of all kinds—from that due to gonorrhea at one end of the scale of infectivity to that due to trauma at the other. The discussion, however, limited itself in the main to a consideration of arthritis in

association with focal sepsis, a form which the opener tried to distinguish from rheumatoid arthritis, thereby avoiding the difficulty of answering the question whether the latter is always septic in origin. It is acknowledged that the treatment of infective foci, no matter apparently how thorough, may fail to check the progress of the disease, but it can in no case be confidently asserted that all such foci have been discovered and dealt with; a vaccine—such as that of the micrococcus deformans of Crowe, of which Sir Humphrey Rolleston spoke—may, however, reach the hidden source of trouble and determine a cure. How far disorders of the endocrine glands, such as hypothyroidism, may be primary or secondary causes of arthritis is a question which cannot yet be fully answered, but research in this direction may in the future throw much light on causation and lead to therapeutic advances.

Various forms of irradiation have their records of striking cures, and the treatment by protein shock has its advocates, who have recorded some impressive results. Thus, besides the elimination of septic foci and of all other obvious impediments to the recapture and retention of health, there are many means at our disposal, and it is to be hoped that no arthritic in the future may be justified in echoing the words in St. Mark's gospel regarding the woman "which had an issue of blood twelve years"—that she "had suffered many things of many physicians, and was nothing bettered, but rather grew worse." Yet the difficulty is often great of deciding which particular therapeutic measure is best suited to a particular case, and the patient may have much to go through before relief is obtained. Nevertheless, the impression made by a study of the reports of these discussions is on the whole encouraging. The various means of treatment which were considered are not antagonistic, and the adoption of one does not necessarily contraindicate the use of another. Every one will admit that septic foci are dangerous, and that whether there be symptoms of arthritis or not steps should be taken to eliminate these possible sources of disease. Whatever special treatment is decided on, the judicious practitioner will insist on the adoption of the best obtainable hygienic and moral environment, not omitting close attention to diet and the restriction of the carbohydrate intake. Gout and rheumatism are seldom confounded nowadays, but the traditions of former times still exert their influence, and there remains a tendency to restrict the use of meat in the latter disease merely because meat has been found to have a bad effect in the former.

The Reduction of the Death-rate From Diabetes, Particularly From Diabetic Coma, in Massachusetts.

Writing in the *Boston Medical and Surgical Journal* of October 15, 1925, JOSLIN gives us the scheme of treatment carried out by him.

Duties of Nurse.—A. Preparation for reception of patient: (1) A warm bed with blankets in place of sheets and at least four hot-water bags. (2) The necessary equipment in readiness at the bedside for catheterization, for a soap-suds enema, for gastric lavage, for subpectoral infusion of normal saline, for administration of caffeine and insulin.

B. Care of patient: (1) Secure specimen of urine, by catheter if necessary. A specimen of urine is to be tested for sugar and diacetic acid every hour until recovery. If a self-retaining catheter is to be left in the bladder, urotropin (10 grains) should be given every four hours for three doses. (2) Hourly records of the pulse and two-hourly records of the respiration rate and temperature are to be kept. (3) Enema.

Duties of Physician.—A. Examination of patient.

B. Constant attendance until the crisis is passed.

C. If diagnosis of coma is confirmed, write necessary orders for treatment with especial reference to (1) gastric lavage; (2) the method and rate of administration of liquids by mouth, rectum, or subcu-

taneously; (3) the diet; (4) caffeine; and (5) insulin.

The purpose of gastric lavage is to prevent or relieve gastric dilatation.

Liquids by mouth must be given hot and at a rate not to exceed 100 cc an hour. Liquids by rectum, salt solution, black coffee, or tap-water, may be given every two hours for two doses and thereafter every four hours. If the patient is dry, unhesitatingly give salt solution subpectorally, except in the presence of pulmonary râles, when it may be given under the skin of the thighs. If the intravenous route is preferred, give very slowly 250 to 500 cc and no more until at least an hour has elapsed. One cc of adrenalin from a sterile ampoule may be added to the salt solution when the systolic blood-pressure is below 90.

The diet should not contain more than carbohydrate 50 grammes, protein 25 grammes, and fat 25 grammes in the first twenty-four hours unless warranted by unusual improvement of the patient. This diabetic prescription is represented by oatmeal 30 grammes dry weight, equivalent to 500 grammes of thin gruel, orange juice 250 grammes (the juice of two small oranges), the whites of five eggs, and medium cream 120 cc. Broths, coffee, tea, cocoa shells may be utilized as vehicles for the above.

Caffeine sodium benzoate is injected subcutaneously, 5 grains every hour for four doses, and thereafter as indicated.

The gravity of the coma is evidenced by the degree of stupor, the exhaustion of the patient as shown by a rectal temperature of 95° F. or below, by circulatory collapse with blood-pressure below 80 systolic, dry mucous membranes and skin, soft eyeballs, and by hemorrhagic vomitus or gastric contents. Air hunger, if slight but definite at first, increases to a maximum, and toward the end gives way to shallow respiration.

The size of the first dose of insulin in coma depends upon the doctor's estimation of the probable number of hours the patient can live without insulin. If the patient's expectation of life is twenty-four hours, one would inject 20 units and repeat every hour until clinical improvement and sugar in the urine or blood is approaching normal; if the patient's expectation is twelve hours, one would inject 40 units and repeat the dose in the same manner, changing the quantity to 20 units as the state of the patient warrants; but if the expectation is only six hours, one would inject 40 units every thirty minutes until improvement is manifest. Finally, in a case like one which he reports, who died three and a half hours after entrance, we should now give 40 units of insulin every fifteen minutes. He never intends to have a patient at the New England Deaconess Hospital come up to within two hours of death from coma without having received at least 150 units of insulin in the preceding hour.

Body Weight in Relation to Health and Disease.

DuBray in the *American Journal of the Medical Sciences* for October, 1925, insists upon the fact that body weight is a simple measurement of extreme importance in clinical medicine. An individual who presents a marked variation in body weight should demand a rational explanation for this alteration. Our patients should be aware of this fact, and unexplained variations in their weight should excite their curiosity sufficiently to urge them to seek medical advice. Abrupt gain or loss may be explained in certain instances on a physiological basis, but it is more likely to be associated with disease.

The tendency to excessive gain in weight is best controlled in its incipiency. In the majority of adults obesity is of the exogenous type and can be adequately controlled by broad hygienic measures, in which restriction in diet affords only one part of the therapeutic régime. Exceptional instances of the true constitutional type of obesity, recently studied by Strouse, do exist. They represent a true metabolic anomaly which is not entirely understood. Clear-cut examples of endocrine obesity are common before the adult age and are believed to be primarily dependent on the disturbance of function of three ductless

glands, namely, the thyroid, gonads, and the pituitary, either singly or combined. The endocrines *per se* play a less important part in the obesity occurring in adults.

Aside from the esthetic reasons and the constant inconvenience of marked overweight, this condition should be studiously guarded against, because of the fact that it is found to predispose to diabetes, degenerative cardiovascular diseases, arthritis, and static difficulties associated with faulty bodily mechanics.

Surgery in the obese is facilitated and the mortality reduced if an internist coöperates in the preoperative and postoperative management of these cases.

Loss of body weight and undernutrition have likewise many important medical aspects. Reduction of physical and mental vigor, increased sensibility to cold, depression of the hormonal system, lowering of the metabolic rate, and increased susceptibility to infection are among the most significant results of undernutrition.

Life insurance statistics indicate that those who weigh between 10 and 20 per cent below average show the optimum condition for longevity at most ages beyond early adult life.

Magnesium Sulphate for Uremia in Acute Glomerular Nephritis.

BLACKFAN and HAMILTON in the *Boston Medical and Surgical Journal* of October 1, 1925, state that the treatment of uremia occurring in the course of acute glomerular nephritis by intravenous injections of one-per-cent magnesium sulphate has given most favorable results. They have used this method in eleven cases: in eight cases the patients recovered promptly from their alarming symptoms. Three patients who were in the terminal stage died. This form of therapy, although most effective in relieving cerebral symptoms and arterial hypertension, should not be resorted to unless there are presenting symptoms, as visual disturbances, delirium, convulsions, and arterial hypertension. It does not alter the course of the disease as evidenced by the renal symptoms. The solution is injected in amounts of from 10 to 15 cc per kg. of body weight and at the rate of 2 cc per minute. The fall in blood-pressure during the procedure is the best index as to the total amount necessary to use. The immediate effect of such an injection on the blood-pressure is shown in one of the charts illustrating his paper. It should be remembered that the action of this solution intravenously is evidenced by a prompt fall in blood-pressure with rapid relief of the cerebral symptoms. Frequently diaphoresis and diuresis follow, but when injected intravenously magnesium sulphate does not exert a cathartic effect. The duration of the effect is from five to twelve hours, so that a rise in blood-pressure with return of the alarming symptoms may be expected unless active measures directed against the generalized edema are instituted. This is best accomplished by the administration of magnesium sulphate by mouth and by rectum. It has been their custom to use 1 to 1½ ounces of the 50-per-cent solution of magnesium sulphate by mouth every four to six hours, and 2-3 ounces of the same solution by rectum every six hours. Overdehydration should be avoided.

In explanation of the action of a one-per-cent solution of magnesium sulphate two possibilities are presented: (1) The action may be due to the sedative effect of magnesium, or (2) it may be due to a change of the osmotic relationship between the blood and tissues of the brain such as is supposed to take place when a hypertonic salt (NaCl) solution is injected.

While the possibility of a sedative action of the magnesium radical in the type of cases under discussion has to be kept in mind, it seems quite unlikely that the small amounts of magnesium used (0.05 to 0.1 gm. per kg.) are sufficient to exert a physiological action of magnesium. In the treatment of tetanus and tetany, much larger amounts than they have used are necessary in order to obtain a sedative action. Meltzer, in advising the use in tetanus of a six-per-cent solution intravenously, stated that the quantity to be given should be

sufficient to secure complete relaxation of the muscles. They have used a one-per-cent solution (in amounts corresponding to 10 cc per kg.) in patients with tuberculous meningitis, with uremia complicating chronic nephritis, in acute tubular nephritis and in animals, without observing any sedative or relaxation effect whatsoever. Magnesium sulphate in the concentration used by them in the treatment of uremia has no direct action on the vascular system when the blood-pressure is not raised. When the solution is injected slowly at the rate of 2 cc per minute there is not observed any change in respirations or in the pulse rate; if, however, it is injected rapidly, irregular respirations with a fall in the pulse rate may occur. They have seen the blood-pressure fall thirty points after 25 cc (0.025 gms. $MgSO_4$) of the solution had been given within two minutes. This they believe was due probably to a sudden release of intracranial pressure. Urinary retention or evidences of renal irritation have not followed the use of this solution.

As to the second possibility, perhaps it would seem improbable that the action of this hypotonic solution of magnesium sulphate would be the same as the action of a hypertonic solution of sodium chloride. It must, however, be borne in mind that magnesium sulphate is much less diffusible than sodium chloride. During the injection, and for some time afterwards, an excess of the salt remains in the blood stream.

If, as is suggested by these observations, edema of the brain is an essential factor in this form of uremia, then the sequence of events which so consistently takes place can be rather clearly postulated. A rapid encroachment on the intracranial space from the increasing cerebral edema would result in a steady increase of intracranial pressure which in turn would initiate the symptoms, vomiting, headache, convulsions, etc. The arterial tension would increase correspondingly inasmuch as the regulatory mechanism is so adjusted by the vasomotor center that it (the arterial tension) is always held in excess of the external pressure exerted by the compressing force (in this case edema) against the arterioles, and capillary vessels in the medulla. A fatal bulbar anemia would ensue, accompanied by pulmonary edema and followed by cessation of respiration, should the vasomotor center fail to keep the arterial tension in excess of the increased intracranial tension.

The observations herewith presented support the view that edema of the brain is the initial cause of the cerebral symptoms and arterial hypertension in acute glomerular nephritis in children. It should be emphasized that these studies were made in young children so that arteriosclerosis, cardiac hypertrophy and advanced renal lesions can be excluded as factors requiring consideration. Explanations for the development of edema, or reasons for its involvement of the brain in one patient and not in another patient suffering with the same form of systemic injury, are purely speculative in view of our present knowledge.

In summarizing their paper they say: (1) The form of uremia seen in acute glomerular nephritis in children is characterized by headache, vomiting, visual disturbances, delirium or coma, and convulsions. (2) It is always preceded by a steady rise in arterial tension and by visible but not necessarily marked edema. A steady increase of arterial tension is the most reliable indication of approaching uremia. (3) Intracranial tension resulting from edema of the brain is probably the causative factor of the symptoms in this form of uremia. This is suggested by finding an edematous brain at autopsy and the relief afforded by treatment favoring a decrease of cerebral edema. (4) Arterial hypertension is probably the result of increased intracranial pressure. (5) The intravenous injection of one-per-cent solution of magnesium sulphate together with the administration of large doses of the salt by mouth and by rectum has been found to be effective in the treatment of this form of uremia. The intravenous injection should be repeated if necessary at 12- to 24-hour intervals until the blood-pressure remains at a low level and the cerebral symptoms have subsided. (6) Intra-

venous treatment is not effective during the medullary cone phase or in the terminal stages. (7) Lumbar puncture should be used guardedly in order to avoid incarceration of an edematous brain in the foramen magnum. (8) The term uremia is misleading as the symptoms are not dependent on the retention of nitrogenous end products. It is suggested that the characteristic symptoms with arterial hypertension be referred to as the cerebral symptoms of acute glomerular nephritis.

They follow the procedure of injecting the solution in one arm and following the blood-pressure in the other arm. The solution is injected very slowly—not more than 10 cc per minute—and the amounts which have been injected have been about 200 cc, perhaps 175 to 200 cc, to patients between four and ten years of age, perhaps 20 cc per kilogram of body weight; they endeavor to inject a sufficient amount to reduce the blood-pressure; in the patients who have entered the terminal stage with the medullary cone phase it has been impossible to reduce the blood-pressure down more than 10 to 15 points, but in the other patients it comes down very promptly.

Persistent Diarrhea in Phthisis.

In the Correspondence columns of the *Lancet* of October 3, 1925, HURST states that he believes that the usual cause of this condition is the achlorhydria which is a very frequent sequel to phthisis. Permin gave test meals in 658 cases and found that free hydrochloric acid was absent in 23 per cent in the "first stage," 34 per cent in the "second stage," 47 per cent in the "third stage," and in 75 per cent of those who died within six months of the examination. It is a familiar fact that achlorhydria is the most common cause of chronic and recurrent diarrhea in non-tuberculous patients, and that this can be rapidly and completely cured by the use of hydrochloric acid. Similarly, the rational treatment of the diarrhea of phthisis is to administer the acid in adequate doses. The large dose required in such conditions as Addison's anemia is unnecessary. As a rule, between 30 and 60 minims taken with each meal is sufficient to control the diarrhea; this can be given as a medicine in two ounces of water, or more agreeably as a beverage in a glass of water with the addition of sugar and the juice of an orange or a lemon.

The Treatment of Scarlet Fever With Antitoxin.

In the *Boston Medical and Surgical Journal* of October 8, 1925, BLAKE and TRASK state that scarlatinal antitoxin in proper amount is a specific and prompt cure for uncomplicated scarlet fever.

It indirectly benefits septic complications during the acute stage of scarlet fever, presumably by curing the specific toxemia.

It has not been possible to demonstrate that it possesses any therapeutic value in post-scarlatinal sepsis after the rash has faded.

To be therapeutically efficient in reasonable dosage an antiscarlatinal serum should contain at least 12,500 minimal blanching doses of antitoxin per cc or be able to neutralize at least 10,000 skin-test doses of toxin per cc.

The amount of antitoxin required to cure scarlet fever promptly and with certainty by intramuscular injection varies from 3000 units to 12,000 units (30 to 120 cc of a serum which neutralizes 10,000 skin-test doses of toxin per cc), depending upon the size of the patient and the severity of the disease.

To obtain the best therapeutic results the full amount of antitoxin required in each case should be estimated and given at once as soon as the diagnosis is made.

With regard to the prophylactic use of the antitoxin—at the present time they do not recommend its use as a prophylactic measure in children who have been exposed, not because it will not prevent the disease but for the reason that most of the serums now used produce serum sickness, which is alarming to the parents; and, secondly, the susceptibility to scarlet fever is not comparable to that of measles or chicken-pox,

and many children who have been exposed will not get it; furthermore, the cure is prompt when the antitoxin is used. For these reasons they prefer not to give the antitoxin as a prophylactic measure at the present time, but to reserve it for use if the patient gets the disease.

Tonsillectomy During Acute Tonsillitis.

In the *Military Surgeon* for October, 1925, CLOWARD states that from his short series of cases it seems (1) That tonsillectomy during acute tonsillitis is a safe surgical procedure under local anesthesia, if a clean excision of the tonsil is made, without undue traumatism to surrounding tissues. (2) Peri- and intra-tonsillar abscesses do not occur if the tonsils are removed in the early period of an acute inflammatory condition. (3) Complications, such as extension of infection and postoperative hemorrhages, are more frequent following tonsillectomies performed during the period in which there is no acute inflammation in the tonsil than occur in tonsillectomies done during the period of acute inflammation. (4) Peritonsillar abscesses and pulmonary abscesses frequently complicate acute tonsillar infections. (5) Acute tonsillitis may be treated surgically.

Ether Anesthesia.

In the *Journal of the Missouri State Medical Association* for October, 1925, WATERS states that the recent literature presents two notable additions to the physical signs of general anesthesia: (*a*) Guedel's subdivision of surgical anesthesia into four planes with a definite marking of the end of the first plane as the point when extrinsic eye muscle paralysis is complete; (*b*) Miller's observation of the ascending respiratory muscle paralysis that occurs as anesthesia is deepened. [This has been recognized for many years.—ED.]

In this paper he has taken the liberty to suggest that the point described by Miller as marking cessation of thoracic breathing be used as the beginning of Guedel's third plane.

The paper attempts to show that the first and second planes of third-stage anesthesia are much less damgaing to the circulatory muscle than are deeper planes, because the respiratory movements of the chest still support circulation.

He has tried to present evidence that the first and second of the four planes, marked by the findings of Guedel and Miller, may be better suited to the requirements of abdominal surgery than are the third and fourth planes, because diaphragmatic movement is less, abdominal venous engorgement is not present, and anoxemic rigidity of abdominal muscles is not present.

A further inference may be made that damage to the circulation during ether anesthesia is not due to chemical effects on the heart, but to added load placed on that organ when the respiratory muscles supplied by dorsal segments of the cord are paralyzed.

Atypical Tabes Dorsalis: Surgical Errors in, with Leading Points in Diagnosis.

In the *American Journal of the Medical Sciences* for October, 1925, BENNETT states that atypical or "forme fruste" type of tabes is the most frequently missed form of the disease. Gastric crises in this variety often lead to unnecessary abdominal operations.

Incomplete histories, careless examinations and infrequent spinal punctures in doubtful cases account for most errors. Gastric crises occur in from 10 to 20 per cent of all cases of tabes dorsalis.

Reliable reports indicate that more than 10 per cent of tabetics have needless operations performed at least once upon a mistaken diagnosis. There are frequent reports in the literature of patients having had four or five abdominal operations when the cause of the symptoms was root pains of syphilis.

The classical signs of tabes are absent in approximately one-half of the early cases, when abdominal pains may be present. The

knee-jerks are normal or exaggerated in at least 25 per cent of early cases. The same applies to ataxia, Argyll-Robertson phenomenon, and other later signs. Approximately 10 per cent of cases remain atypical throughout the entire course of the disease.

A complete life story of the individual with a careful analysis of the onset and development, a careful neurological examination and a spinal fluid study should be made where there is the slightest doubt as to a diagnosis.

In patients presenting recurrent abdominal attacks with no relief from previous operations, the possibility of an atypical form of tabes dorsalis should be very firmly impressed upon the minds of surgeons, in order to decrease the all too frequent incidence of unnecessary operations upon tabetics.

Treatment of Pertussis by Roentgen Ray.

In the *American Journal of Diseases of Children* for October, 1925, under the heading of "Society Transactions," HESS reviewed the literature on this subject and gave tables illustrating his two groups of patients who had received this treatment, a summer and fall group of 62, and a winter group of 40 cases. The following technique was used: With a 4 ma., using a 1-mm. aluminum filter and a 7-inch spark-gap at a distance of 14 inches, a five-minute exposure was made, the exception being in young infants when the first treatment at least was given for a shorter period, usually from two and one-half to three minutes. The treatment was given with the child lying on its back in the majority of cases. In no instance was the treatment repeated in less than five days, while in some the interval was as long as seven days.

The following conclusions were drawn:

Treatments should not be given before the paroxysmal stage is reached, since their chief function is to lessen the severity of the disease. In some cases there was a striking shortening of the course, which is of secondary importance.

In the summer and fall group, striking results were noted in 43 per cent, or twenty-seven of the sixty-two cases, and considerable improvement in an additional 34 per cent, or twenty-one cases. In ten of the twenty-seven cases only one treatment was required, in twelve two treatments, and in four cases three treatments. In the winter group there were fewer striking results, a total of 25 per cent, and an additional 27.5 per cent with general improvement. On the ten showing striking improvement one patient received one treatment, three patients received two treatments, and six received three treatments.

In six cases of secondary pneumonia there was general improvement after roentgenotherapy.

Excessive exposure of young children is dangerous. The neighboring organs should be protected and only a minimum number of exposures should be given.

He recommends that the results, both immediate and remote, of roentgenotherapy in whooping-cough be further studied before suggesting the method for general use. The adoption of this method as a routine treatment would require a change in quarantine regulations in most cities.

Some Problems of Ventilation.

LEBARON in the *Military Surgeon* for October, 1925, recalls the fact that the theory once held that ill effects suffered from vitiated atmosphere are due to an increase of carbon dioxide or to a decrease of oxygen is no longer tenable. It is the consensus of opinion that there are no toxic poisons in exhaled air.

The symptoms experienced in ill-ventilated rooms are usually due to high temperature, high relative humidity, and lack of air movement. These symptoms resemble and are probably identical with heat exhaustion.

The optimum temperature for barracks is in the neighborhood of 56° F. wet-bulb and 70° dry-bulb, with a relative humidity of about 40 per cent. The combination wet- and dry-bulb thermometer is the best in-

strument for determining these factors. Standard types are to be had from several reputable instrument houses in the country at a relatively low cost. Accompanying these thermometers is a chart for interpretation, and readings may be made in a few minutes by a person of ordinary intelligence.

In ventilation, the factors to be primarily considered are temperature, humidity, and movement of air. Unfavorable relations of temperature and humidity, with the absence of proper air motion, tend to react detrimentally upon certain bodily processes, thus predisposing to disease.

In crowded barracks with difficulty in maintaining proper distance between beds, all men should be required to sleep head to feet.

The proper method of ventilating barracks is still a matter of much discussion, and difference of opinion exists between medical officers and ventilating engineers. More definite work must be done before conclusions can be drawn. All are agreed, however, that satisfactory ventilation must take into account the introduction of clean, fresh air of proper temperature, humidity, and motion, and withdrawal of vitiated air.

Surgical and Genito-Urinary Therapeutics

Cæsarean Section in Relation to the Practice of Obstetrics.

RONGY *(International Journal of Medicine and Surgery,* September, 1925) observes that the modern woman does not bear children with good grace. Her mental reaction toward pregnancy is not cheerful. She is apparently unable to cope with the strain put upon her system by the process of childbirth. Nowadays, the physician is confronted with many problems in the management of pregnancy and labor to which the older practitioner of medicine never had to give thought or consideration. It is more difficult to carry through a maternity case to a successful issue now than it was a generation ago.

One of the great drawbacks to the true progress of the practice of obstetrics is the fact that the modern obstetrician is neither a trained physician nor a surgeon. Some are not even mechanically skilful. They are, however, brave men, and not infrequently invent ingenious excuses for interfering with nature and substitute all sorts of artificial methods, either to hasten or to complete the delivery of the child.

As to the percentage of cases in which delivery is instrumentally expedited, some practitioners hold that 50 per cent of first labors are terminated artificially, others that some form of interference is instituted in 75 per cent of cases. One nurse said that she did not remember a normal delivery in any primipara patient of a well-known obstetrician. The present tendency of obstetricians to help women give birth to their children is one of the great reasons for the high mortality associated with childbirth in this country.

Cæsarean section, as a method of delivery in cases of placenta prævia, is not, as yet, accepted by the medical profession generally. It is surprising how such cases are still badly mismanaged. The majority of them reach the hospital in an exsanguinated state. It is not unusual for these patients to have the red blood cells diminished to 2,000,000, the hemoglobin index less than 50, and the pulse 120 or more, before they are sent to the hospital. Such patients are bad risks for any surgical interference, especially when the peritoneal cavity has to be entered.

It would be a wise plan on the part of the physician to send all women who develop bleeding during the last three months of pregnancy to the hospital, not for immediate treatment but for observation. Such patients must not be allowed to remain home

until they are practically ensanguinated. They are difficult enough to manage in the hospital, for there is no way of judging before labor sets in whether there is a marginal or central placenta prævia. The only sign to guide in the management of the case is the extent of the bleeding, and if the blood loss is great the variety of placenta prævia does not in any way influence the mode of treatment.

Eclampsia is at present a great battle-ground for obstetricians. There are two distinct schools in regard to the proper treatment of this disease—the radical and the conservative. The only thing which is positive about this condition is that it occurs during the pregnant state and is dependent to some extent upon the pregnancy. It is, therefore, logical to assume that the patient would have a better chance for recovery if the pregnancy were terminated. Patients suffering from eclampsia, who are not in labor, who are steadily growing worse because of frequent convulsions, and in whom the condition of the soft parts renders the operation from below dangerous, are best treated when they are delivered by the abdominal route.

It took a long time for obstetricians to realize that some of the malpositions, like an impacted face or a persistent occiput posterior, in a primipara, are best managed when they are delivered by Cæsarean section. Malposition, in the largest number of instances, spells disproportion between the fetal head and the pelvis, and unless the malposition can be corrected great damage will be done to the mother if the attempt at delivery is made from below. In addition to this, the child as a rule is still-born.

We no longer subject the pregnant woman who suffers from heart disease to a long and tedious labor. A protracted labor not only has its immediate dangers, but it very often strains the heart to such an extent that the patient becomes a cardiac invalid. These women can and should be delivered by Cæsarean section under local anesthesia in the thirty-seventh or thirty-eighth week of pregnancy, thus saving them the strain of labor and the tax that the last few weeks of pregnancy put upon the heart; furthermore, they can be sterilized if deemed necessary.

There is very little postoperative disturbance when the operation is done under local anesthesia. It must be done quickly and the uterus must not be lifted out of the abdominal cavity. Pulling and dragging of the uterus causes the patient a great deal of pain and discomfort. Assisted by an efficient staff, the time consumed in the performance of such an emergency operation should not be longer than ten to fifteen minutes.

The elderly primipara is becoming more and more a problem to the obstetrician. Modern economic conditions are to a great extent responsible for late marriage both of men and women. It is not at all unusual to see women give birth to their children long after they have passed the third decade. While a statistical study of the duration of labor in elderly primiparæ will differ only slightly from a similar study in a younger group, nevertheless it is a clinical fact that women between the ages of thirty-five and forty years experience great difficulty in giving birth to the first children.

In many of these patients the cervix is thick and hard. Dilatation, if it takes place at all, is very tedious, and often complete inertia sets in before the dilatation is complete. The abdominal route of delivery will conserve the greatest number of mothers and children in this group of cases. We must remember, however, that statistics show that women over forty have less difficulty in giving birth to first children than women under forty. It seems that these women have reached a period in life when the muscular resistance is greatly diminished and also that the babies are usually smaller.

As to the mortality of Cæsarean section, J. C. Hirst is quoted as having lost but 2 per cent in 252 cases.

Recently, the statistical study of Holland of 4197 cases of Cæsarean section performed in the British Isles during the ten years beginning with 1911, threw a great deal of light on the management of com-

plicated cases of labor. It clearly showed that the mortality depended upon how early or late in labor the operation was performed.

In a series of 3372 patients operated on for contracted pelvis, the mortality was 4.1 per cent. In 1292 cases, operated on before labor set in, the mortality was 1.6 per cent. Of 389, early in labor, the mortality was 1.8 per cent. Of the cases operated on late in labor, the mortality was 10 per cent, where there had been previous induction of labor. In 35 cases the mortality was 14 per cent. In 101 cases of unsuccessful instrumentation, the mortality was 25 per cent. In 6 cases, after craniotomy, the mortality was 50 per cent. In 46 cases of Porro operation, the mortality was 17 per cent. The placenta prævia mortality was 11.5 per cent. In 66 cases of accidental hemorrhage, the mortality was 27 per cent. In 44 cases of grave cardiac disease the mortality was 22.5 per cent. Bride in his study of Cæsarean section occurring in the city of Manchester, England, during the years 1911-1920, reports 648 cases, with a maternal mortality of 7.7 per cent.

The broader application of Cæsarean section created a new problem: the management of the Cæsareanized woman during subsequent pregnancies. Every obstetrician is confronted with this problem.

Recent investigations prove conclusively that rupture of the Cæsarean scar takes place in more than 3 per cent of patients and that the mortality in such cases is 50 per cent, no matter how promptly treatment is instituted.

Therefore nearly 2 per cent of women who have had Cæsarean section performed ultimately perish as a result of the operation. It is a great responsibility that the obstetrician assumes when he undertakes to manage a subsequent pregnancy in a Cæsareanized woman. Such a patient must be carefully watched from the time uterine contractions set in, and if labor does not seem to progress favorably and rapidly, she should be Cæsareanized.

The author advises sterilization of the woman at the time the second Cæsarean operation is performed. He refuses to perform a third Cæsarean unless the patient gives permission for sterilization.

Time was when surgery was a matter of craftsmanship. But a limited number of operations were performed; speed, dexterity, and ability to do a finished job in the shortest possible time were the goals every surgeon aspired to reach. Surgery was then an art. To-day the art of surgery is degenerating into a highly specialistic assault on tissues and organs of the human body. Cæsarean section is no exception to the rule.

Gonococcal Urethritis.

BEUTEL *(Urologic and Cutaneous Review,* September, 1925) has had best results with injections by hand syringe every two to four hours, using ten-per-cent argyrol or two-per-cent protargol solution. After two or three days' treatment microscopic examination will show a great reduction in the number of gonococci, and those noted in the field appear less virulent. The progress of the case should be carefully watched daily and frequent microscopic examinations made of the discharge. When gonococci have entirely disappeared daily irrigations with hot zinc permanganate solution (1 to 500) should be employed. The patient continues hand injections with ten-per-cent argyrol solution each morning, and astringent injections after each urination.

Irrigations every other day with nitrate of silver, beginning with a weak solution and gradually increasing the strength, are much better than irrigations with permanganate of potassium.

The solution of silver nitrate which the author employs begins at a strength of 1 to 16,000; this is gradually increased to 1 to 2000, seldom ever stronger than that. The solution is made with distilled water at a temperature of 100° to 103° F., one quart for each irrigation. A stock solution of silver nitrate is kept on hand, one drop representing one grain of the salt. One drop of this solution in a quart of water gives 1 to 16,000, and the strength is in-

creased by adding drops to the number of eight, which gives 1 to 2000. When the discharge begins to subside, the strength is gradually increased according to tolerance of the patient. At the same time between office treatments the patient continues the astringent hand injections after each urination.

The best urinary antiseptic is boric acid. Toward the close of the attack a balsamic seems to be helpful. For this purpose the author prefers a combination of resin kava-kava one part and santal oil three parts; dose five to ten drops in capsule after meals.

It is always advisable to massage the protate and pass a cold sound several times before dismissing the patient.

Uretero-ureteral Anastomosis.

JOANNIDES and HOLMES *(The Journal-Lancet,* Oct. 1, 1925) thus conducted their experimental work on dogs: After exposure the ureter was grasped with small artery forceps, was severed, and a ureteral catheter was inserted. In inserting the catheter it was found advisable to pass it first into the renal end and then into the cystic end. After the catheter was inserted the ureteral ends were approximated in some experiments, and in others a gap of one to two centimeters was left. In the latter cases the exposed catheter was covered by means of peritoneum, which was sutured loosely around it. In some animals only one ureter was used, the other being left as a control. In the rest of the animals both ureters were severed and bridged over. The caliber of the catheters used was No. 5 French, a size which was found to fit snugly in practically all ureters.

Earlier work on uretero-rectal anastomosis indicates that the operation is dangerous. On the other hand, the reports of Mayo and Folsom show that such an anastomosis is fairly safe in clinical cases. In cases of injury to the ureter, however, a uretero-ureteral anastomosis should be preferred because it is an attempt to restore the ureter to its physiological condition. By means of such an operation the kidney is again connected with the bladder and, with the exception of possible postoperative stenosis in the ureter, conditions are as close to normal as any one can reasonably hope to make them. If stenosis follows such an operation, one can easily dilate the ureter from time to time, since cystoscopy has been so simplified that catheters or bougies can be easily inserted into the ureters. While healing occurs and the catheter is still *in situ,* it can be manipulated whenever necessary until a tract is formed at the area where a gap is present between the severed ends of the ureter.

The authors conclude that in the dog uretero-ureteral anastomosis is a satisfactory procedure. If a gap of one to two centimeters is left between the severed ends tubulization takes place around the catheter. If the severed ends are well approximated no injury is likely to follow in the kidney. If there is a gap between the severed ends, stenosis or fistula may occur and thus lead to hydronephrosis and infection.

Dynamogenic Power of the Liquid Extract of Normal Testicles.

BROWN SEQUARD *(Medical Record,* Sept. 2, 1925) wrote for the *Archives de Physiologie* in 1869, as translated by Stanley, that up to the age of sixty he had been in the habit of going up and down stairs almost on the run. This mode gradually changed until it finally became necessary for him almost to hold to the hand rail on the steep stairs. After the second injection of testiculin he regained his lost propensities, and had, without realizing it, regained his old habits. The strength of his limbs was markedly increased. The projectile power of his bladder and urethra as measured by the parabola formed by the stream of urine was increased by one-fourth. For ten years expulsion of fecal matter had been extremely laborious. It was almost impossible without the use of purgatives or artificial means. He made regular use of laxatives,

not so much for the constipation, which was very great except at rare intervals, as to increase the motive action of the intestinal wall. During the fifteen days which followed the first injection a radical change took place in the reflex of defecation. The expulsion of fecal matter was accomplished without medical assistance or lavage. There had taken place a return to a normal condition of a number of years before.

Intellectual effort became easier than it had been for a long time, and the other physical forces were remarkably strengthened. He notes that it is evident from these facts that all functions, dependent upon the dynamic power of the nerve centers and especially the spinal cord, are remarkably and rapidly improved by the injections thus employed. The last injection was made on June 4. For more than four weeks there was no change, all the improvements having persisted. But gradually and then rapidly thereafter there was an almost complete reversion to the condition of weakness which existed before the first injection. "This gradual loss of strength is an excellent proof in that it shows the favorable influence upon me of the subcutaneous injections of a fluid taken from the testicles."

Observations on One Thousand Appendectomies.

FIELD *(Boston Medical and Surgical Journal,* Sept. 10, 1925) bases his paper on 1124 consecutive cases operated on by him from January 1, 1918, to July 1, 1925. Five hundred and sixty-one were for acute appendicitis in all stages, including that of general peritonitis; 144 were for chronic appendicitis; and 419 appendices were removed in the course of other abdominal operations. Many of these were pathologic, containing concretions, etc.; others were removed for prophylactic reasons. Ninety-two per cent of these cases were private, being referred by fifty-six different physicians. The operations were performed in eleven different hospitals.

In the majority of cases the diagnosis was made with the greatest ease. In other cases its determination was beset with the greatest difficulty.

The symptoms of appendicitis — pain, nausea and vomiting, localized tenderness and rigidity, elevation of pulse and temperature, and leucocytosis — are all well known. It is not so well recognized that these symptoms occur in an almost definite order.

Nearly all children under five years of age came to the operating table with the appendix ruptured. One diagnostic point to bear in mind is that a child with an acute abdomen will not sleep himself, and not let any one else sleep; whereas with other diseases, even pneumonia, the child frequently sleeps for long periods.

Postoperative treatment: The routine orders for the simple case are morphine sulphate gr. 1/6 p. r. n.; rectal tube and purgative enema p. r. n.; cracked ice or sips of water in small amounts; nourishing liquids as soon as the stomach is tolerant. Light house diet is generally given by the fourth day. If there is troublesome vomiting, or regurgitation of small amounts of bilious fluid, or epigastric distention, the stomach is washed out. If indicated, and it frequently is, salt solution, or 5-per-cent glucose solution, is given by rectum. Salt solution is not given under the breast, but the needles are pointed downward toward the back. At times novocaine is added to the solution as advised by Bartlett. In peritonitis cases the head of the bed is raised on blocks or pegs—then the correct position is assured; if a back rest is relied upon we do not get a true Fowler position, the abdomen being almost horizontal. If the cecum is damaged, care should be used in giving large enemas as there is danger of perforation. Otherwise, hot suds and milk of molasses and purgative enemas are freely used. Pituitrin is seldom given, and only with a rectal tube in place. Occasionally, where intestinal obstruction comes on during the suppurative period, a high enterostomy is done with a small T-tube. The intestine has always closed up without op-

eration and time has taken care of the obstruction. Cardiac stimulants are seldom required. The judicious use of salt solution, morphine, gastric lavage and hot packs over the abdomen are the life-saving measures in the postoperative treatment of appendicitis.

The End Results of Compressed Fracture of the Spine.

ROGERS *(Boston Medical and Surgical Journal,* Sept. 10, 1925) writes on eight cases of compressed fracture of the spine without paralysis that were under treatment during the year 1924.

The *x*-ray findings in most of the cases of compression fracture are rather uniform and depend on the length of time from the injudy to the first *x*-ray. If the *x*-ray is taken within two weeks of the injury there is very little evidence of compression of the vertebra. A very clear and well-focused ray which gives bone detail may show a break in the cancellous striations, and generally an irregularity of the cartilaginous surface. There may be a slight amount of loss of depth of the vertebra, especially on one side. Later there is developed the wedging of the vertebra that is so characteristic of an old fracture. At this stage there is a greater density of bone and the normal striations of the vertebral body are lost.

It is very easy to control the pain in a compressed fracture of the spine. Generally simply lying in bed without much motion is sufficient, but there has always been the danger of cases of this nature being discharged as simple back strains, because the pain has disappeared and it is thought that there is nothing wrong. In some cases the original accident seems to have been slight and the immediate symptoms are, in themselves, not severe enough for the patient to be confined to bed.

These cases have received practically a routine treatment which can be summarized as: six weeks absolute recumbency, followed by complete fixation in a plaster cast or leather jacket for six more weeks. Then, gradually, more freedom is allowed while protected by a back brace until the patient can work without symptoms. If his work is not of the hardest type he can begin it while wearing some form of support, but if it is of a type that requires lifting and stooping, all support should be off and the work should not cause pain if a good end-result is desired.

In this series of cases it required on an average six months before the symptoms disappeared, although many were at work before this time. On examination they showed practically no kyphosis and almost no restriction of motion. If there is much restriction of motion it is generally due to secondary changes in and about the fracture, such as bone overgrowth.

The object of the immediate fixation which is continued long after the first symptoms of pain have disappeared is to prevent the secondary changes that we used to see and which were possible causes of permanent damage.

Production and Healing of Peptic Ulcer.

MANN *(Minnesota Medicine,* October, 1925) in an experimental study notes that the peptic ulcer usually occurs in a mucosa which, although secreting an alkaline juice itself, is exposed to an acid medium. The degree of acidity and the amount of acid to which the ulcer-bearing area of the gastrointestinal tract is subjected depends not only on an acid-producing mechanism, but also on an alkali-producing mechanism. The acid secreted by the gastric mucosa must be neutralized before the action of the pancreatic enzymes can be effective. The neutralization not effected by the food must be effected by this alkali-producing mechanism, which consists of three secretions: the intestinal (also the secretion of the pyloric mucosa) and the pancreatic juices, and the bile. Enough alkali must be produced by these combined secretions to neutralize the acid that passes the pylorus, if digestion in the intestine is to be carried out normally. The upper portion of the intestinal tract can

be subjected to an acid medium just as effectively by damaging the alkali-producing mechanism as by the administration of acid. A method was devised which consisted essentially in draining the alkaline secretion, which is poured into the duodenum, into the ileum at a considerable distance from the point of emergence of the acid from the stomach into the intestine. Following this procedure a typical peptic ulcer developed in a high percentage of experiments. It usually developed within a month or two after operation, and always in the gut mucosa just distal to the suture line, usually slightly posterior and to the right.

After an ulcer had developed in certain animals, its site was explored, the character of the lesion observed, measurements were taken, and in some instances a specimen for histologic study was secured. Then the pyloric opening was occluded proximal to the ulcer to prevent the passage of gastric contents over it, and the stomach was drained with a gastrojejunostomy, the stoma in the jejunum being 25 to 30 cm. distal from the ulcer. The ulcer was then examined at various periods after the operation.

Following this procedure the ulcers healed with remarkable rapidity. Within four days their bases were clean. In ten days the ulcers had usually greatly decreased in diameter and depth, and the mucosa had begun to grow in from the edges. On the twentieth day three-fourths or more of the base of an ulcer was covered with mucosa. Before the thirtieth day it was almost impossible to find the site of a lesion. An ulcer 1.5 cm. in diameter and 0.5 in depth, which had perforated the entire thickness of the jejunal wall, would almost entirely disappear within twenty-five days after protecting it from the gastric contents.

Although the method for producing the ulcer was developed on the basis that a discrepancy between acid and alkali production might be an important factor in the production of this lesion, and although the ulcers thus produced heal very quickly when protected from the gastric contents, it must not be considered as proved that the acid factor is the only one in the etiology of these ulcers. While the gastric contents are without doubt of major importance, other factors also are involved.

Perforated Ulcer.

HOLBROOK *(Minnesota Medicine,* October, 1925) quotes Spect to the effect that a review of 3224 ulcer cases at the Dresden Hospital seemed to show that 10 per cent perforate. Bearing on perforation one-half of these cases gave no previous history of ulcer symptoms.

Noehren estimates that 7 per cent of all duodenal and 20 per cent of all gastric ulcers perforate. Men are more subject to this complication than are women. The few symptoms that are present are so striking and definite that a diagnosis in the beginning is not difficult. At this stage there are only two symptoms worthy of consideration. They are: sudden violent pain, and board-like rigidity of the upper abdomen. The pain is intense, excruciating, and often described by the patient as knife-like. It is continuous; not colicky, as in intestinal colic or acute indigestion. The pain of perforation is not relieved by morphine. The patient lies in a tense, fixed position, often screaming with anguish and calling for relief. After the pain begins he usually vomits, but does his best to prevent its recurrence, for fear of aggravating his suffering. He may be in shock; cold and clammy. A severe pain, coming on within a few minutes of the perforation, and felt in the supraclavicular fossa, usually the left, is a symptom often overlooked. It seldom lasts more than fifteen minutes, and Gibson considers it almost pathognomonic.

A large proportion of perforations occur close to the pylorus, and on its anterior surface. If the perforations occur on the posterior stomach wall, the intense pain will be in the back. Perforations on the anterior gastric wall, near the cardiac end, are very rare.

After two hours the condition gradually

changes. The patient is becoming somewhat toxic from absorption. Morphine is now very effective, and the patient and his friends, and often the attending physician, think he must be better.

If the perforation is in the duodenum, its contents have gravitated down the ascending colon, to the right iliac fossa, and now, two or three hours after the perforation, the greatest tenderness and rigidity are in the region of the appendix.

If the perforation has been gastric, the stomach contents have flowed down over the transverse colon, and collected in the pelvis, giving early signs of peritonitis. The leucocyte count, at first normal, is now 12,000, 15,000, or 20,000. The differential diagnosis is more obscure, and unless the physician keeps in mind the sudden onset of terrible epigastric pain, accompanied by early rigidity, he is very apt to make a diagnosis of acute appendicitis.

Hertz reported sixty cases, forty-three of which were admitted to the hospital wrongly diagnosed as appendicitis.

All writers agree on one point, and that is, if these perforation cases are operated within six hours, 100 per cent get well. If the case is held twenty-four hours the mortality will be 45 per cent, and after forty-eight hours practically 100 per cent die.

The treatment of acute perforated ulcer is surgical, exclusively, and the most important consideration is early diagnosis and operation.

The long, median epigastric incision causes less bleeding, may be more rapidly and securely closed, and gives plenty of room.

Butler says there is a great difference of opinion as to whether or not to do a gastroenterostomy after suture of the ulcer. There are about an equal number of writers for and against it, but one gets the impression from those who report the largest number of cases that, in competent hands, gastroenterostomy is advisable, unless the patient is too sick, from shock or toxemia, to warrant the procedure.

Many reserve gastroenterostomy for cases of partial obstruction, or those which they think will have future trouble. If the surgeon is one who is not familiar with the technique of gastroenterostomy, he should simply close the ulcer, and leave any further operative procedure for the few who have later trouble.

However, a careful review of the literature leads one to conclude that gastroenterostomy is the method of choice and is growing in favor.

A Simple Method for Elevating the Depressed Anterior Metatarsal Arch.

KYLE *(Virginia Medical Monthly,* August, 1925) states that he has been consulted by many patients with reference to pain and discomfort about the ball of the foot. Examination of these cases has shown that they were suffering either from metatarsalgia, Morton's neuralgia, callous warts or discomfort in this region of the foot. Most of these patients were wearing an improper type of shoe or, if the proper type, the shoe did not fit the foot; while in a few cases no fault could be found with the shoe. For some time an impression of the foot was made on cardboard indicating just where the lift should be, and from this an oval lift was made on an inner sole. This required constant readjusting.

When Jones and Lovett's Text-book on Orthopedic Surgery came from the press, a shoe with a metal bar screwed to the sole was observed. It was very evident that if this bar was of the proper thickness it should give the proper lift, but here the difficulty arose of having such a bar at hand to fit all sizes of shoes and give all variations of elevation.

The idea was then conceived that it would be a very simple matter to make this lift of leather and fasten the same to the bottom of the shoe sole. The next patient who came into the office requiring a lift stood in the proper type and properly fitted shoe. A pencil mark was made to locate the head of the first metatarsal bone on the inner side of the sole and the head of the fifth metatarsal on the outside. The shoe was then removed and these two points connected by a straight line on bottom of the sole of the

shoe. This line of course indicated the anterior metatarsal joint line of the foot. A line was then drawn an inch and a half behind this line and parallel to it. The shoe was sent to the shoe repair shop where the lift was made. The properly designed lift is merely a triangular wedge which prolongs the sole backwards and shortens the shank. When the shoe is placed on a perfectly smooth surface the only part which comes in contact with the surface is the heel and apex of the lift, the sole clearing the surface at the toe about half an inch. It is important that the heel be perfectly level, allowing the apex of the lift to touch along its entire border, thereby preventing any rocking or unevenness in walking. The amount of the lift depends largely on the comfort of the patient, and not infrequently it is necessary to increase or lower the lift just a trifle.

When the patient stood in the shoe the metatarsal arch was elevated, allowing the toes to drop. After wearing the shoe for two days the patient returned relieved of all discomfort. Such a lift has been used on about thirty cases, with good results in all. The lift may be used for the following conditions:

First, metatarsalgia; second, callus under anterior arch; third, fracture of the toe; fourth, paralytic feet with depression of the anterior arch and dorsally flexed toes (selected cases); fifth, following operations for hallux valgus.

Blood Transfusion.

JENKINS *(New Zealand Medical Journal,* August, 1925) considers this matter from the standpoint of the general practitioner; that is, in regard not so much to its indications, but to the method by which it may be performed. Bearing on the four well-known groups of blood givers, even though one of Group 4, *i.e.* a universal donor, be at hand, it is still necessary to make a direct test of the patient's serum to the proposed donor's corpuscles.

This necessity depends on the following facts: Occasional incompatibility of persons of apparently the same Moss group. There is evidence that the four main groups can be further subdivided. Patients suffering from severe anemias, cachectic persons, patients suffering from malignant disease, are liable to prove incompatible with certain members of their own group. A patient may apparently change his group after one transfusion, due to the development of agglutinins in his serum.

The author has twice transfused patients with blood from the wrong group. The first case was one of profuse hemorrhage from a perforated splenic artery into the base of a gastric ulcer. The patient was blanched, pulseless, and quite unconscious. His daughter was with him, and the writer took one pint of her blood and transfused this together with some saline. He made no attempt to test the compatibility of the bloods. The chances of any donor being suitable are well over 50 per cent. In this case the patient became conscious a few minutes after the transfusion had started and color and pulse came back. A severe rigor fifteen minutes after the transfusion was the only clinical ill effect.

Except in great emergency, the author would not now do a transfusion without directly testing the donor's corpuscles to the recipient's serum. This can be done by any one without knowledge of blood groups.

The method in use is: Take 2 cc of blood from a vein of the recipient. This is best done with a hypo syringe and needle. Let it clot in a small test tube. Serum separates in the cold in half to one hour and more rapidly if kept warmed. Take the prospective donor and clean either the lobe of the ear or the thumb with methyl spirits. Prick and get one or two drops of blood and let it run into a tube containing 1 cc of normal saline. Mix by shaking. Take a clean piece of glass, microscope slide, or white glazed china. With a pipette take up two drops of recipient's serum and run this on to the glass. Wash the pipette and then take two drops of the saline corpuscle mixture. Run this on to the serum and let

mix. The serum-corpuscle mixture should be a decidedly reddish tint due to the blood present. Gently rock the slide at intervals until agglutination takes place or a period of fifteen minutes has elapsed. Agglutination usually occurs in three to five minutes and is recognized by a coarse brick-dust-like deposit being formed. This is due to large aggregation of red cells. They float on a clear field of serum and saline, and are not broken up by rocking the slide. If this agglutination occurs, the donor is unsuitable and another one will have to be tested. If no agglutination occurs the corpuscles remain evenly spread throughout the drop of fluid. Do not mistake for agglutination their settling together on a slide that has been left at rest. Sometimes they sink in the fluid, and give a false appearance of clumping, but on rocking the slide they spread evenly through it and no brick-dust particles are seen. If no clumping occurs the donor is a suitable one, in so far as compatibility of blood is concerned. It is not necessary to mention that the choice of donor should not fall on any one suffering from tuberculosis, syphilis, and other contagious diseases.

Having a suitable donor, you can then perform the transfusion. Citrated blood is the easiest to use, and its advantages are many. Usually a 2-per-cent solution of sodium citrate, freshly prepared, is used to dilute the blood. It is useful to keep powders or capsules of two grammes of sodium citrate made up, and one powder is added to 100 cc of boiling water. As a final dilution of 0.2-per-cent citrate prevents coagulation of blood, you add one part of citrate solution to each 9 parts of blood. If you wish to transfuse 450 cc of blood, you will require 50 cc of 2-per-cent citrate. Citrate solution must be freshly prepared.

To obtain blood from the donor tie a rubber band, or place the cuff from a sphygmomanometer round the upper arm sufficiently tightly to impede the venous return. The vein to be used having been selected, two methods are open to the operator: Inject two minims of a 2-per-cent novocaine solution over the vein intradermally and subcutaneously. Puncture the skin with the point of a fine scalpel, making an opening about one-eighth inch long. Insert through this a large-bore needle into the vein. The Kaliski needle is satisfactory, and it can be obtained with an internal diameter up to nearly one-eighth inch. In proportion to the slowness in obtaining the blood, so will difficulties arise and reactions occur. The only difficulty encountered is in entering the vein, and the tips are (*a*) To have a very sharp needle with a blunt bevel; (*b*) to run nearly parallel with the vein; (*c*) to enter the vein with the bevel away from the vein; (*d*) avoid going right through the opposite wall of the vein.

It does not matter whether the needle is inserted toward or away from the heart. The elastic tube keeps up a positive intravenous pressure. The blood runs freely from the needle and can be collected in five to ten minutes. It is allowed to flow directly from the needle into the warm 2-per-cent citrate solution in a sterile container. A piece of rubber tubing attached to the needle makes the collection easier. During the whole process of collection and transfusion of the blood the fluid should be kept at body temperature. The blood is gently stirred or rocked as it enters the citrate solution to insure thorough mixture. The author usually adds the citrate at intervals as the blood flows.

The alternative method for collecting blood he has used in the absence of a suitable needle, or because of faulty technique in entering the vein: (*a*) Infiltrate the skin over vein with 2 per cent novocaine; (*b*) expose and isolate 1½ inches of vein; (*c*) tie the proximal end of vein; (*d*) pick up edge of vein with artery forceps and cut across; (*e*) direct flow of blood into citrate as before, using the vein as a cannula. This method is certain of success, but, of course, is traumatizing to the donor.

The easiest method of giving the blood to the recipient is by means of a funnel and tube and gravity. The apparatus is filled with saline and the needle entered into the recipient's vein as has just been described.

When the vein is entered, the tourniquet is loosened and the saline is run in, followed by the blood. Take about fifteen minutes to run in one pint of blood. If the veins are difficult to enter with a needle, expose under a local anesthetic. Tie a ligature around the distal end of the vein. Underrun the proximal end with a ligature and tie a single knot loosely. Remove tourniquet. Pick up edge of vein with fine artery forceps, and open. Insert a wide-bore cannula and run in blood as before.

Cisterna Puncture in Intracranial Hemorrhage of the New-born.

BRADY (*Journal of the Missouri State Medical Association,* September, 1925) observes that intracranial hemorrhage in the new-born is frequently overlooked, the cause of death being given as asphyxia, convulsions, atalectasis, or what not. Since the profession is coming to realize that if anything unusual occurs to the baby the first ten to fourteen days, intracranial hemorrhage must be thought of, more and more cases are being recognized. If the obstetrician notices that it is with difficulty the baby is made to breathe immediately after delivery; or will not nurse; is dopey and never brightens up; or if the baby is unusually restless and not only cries but screams; if there is puffiness about the eyes; if there are attacks of cyanosis and difficulty in swallowing; if the sutures are separated and the fontanel bulging; and, finally, if convulsions occur, his first thought must be of the possibility of an intracranial hemorrhage. It is the quiet baby, difficult to arouse and unwilling to nurse, but whose symptoms never become stormy and who improves greatly at about the tenth or fourteenth day, that we are especially likely to overlook. The infant seems to do fairly well, the symptoms do not grow worse, and each day we expect the condition to improve, and it does. To perform any operative procedure we might be accused of being meddlesome, and in just this kind of case the writer has seen develop the typical spastic cerebral palsy toward the end of the first year.

The idea of the operative removal of the clot was conceived by Cushing twenty years ago. Accounts of the success of this procedure are few and far between. Any one who has opened the skull in these cases post-mortem would readily see the difficulty of accomplishing anything by this operation. On the other hand a number of infants with intracranial hemorrhage presenting ominous symptoms have been completely restored by the simple operation of lumbar puncture.

In tapping the cisterna, with the thumb one locates the spine of the axis; the needle then is directed upward and slightly forward in the direction of the glabella and external auditory meatus. The depth to which one must pass the needle before puncture of the occipito-atlantoid ligament is affected, is best guided by the tactile impression. The interruption in bony continuity between the base of the skull and spine affords a rather large opening for the passage of the needle.

In the adult there is a distance of from 2.5 to 3 cms. between dura and medulla as shown by Ayer in frozen sections, the distance depending on the obliquity at which the needle is introduced.

The question naturally arises as to the danger of damaging the medulla in the young infant. Even in such small laboratory animals as the rabbit, guinea-pig and rat there is sufficient space in the cisterna so that there is no necessity of damaging nerve structures.

There are some who question whether the blood which flows from the needle really comes from the subarachnoid, believing a wound of a small vein to be responsible for the presence of the blood. When one sees such a sudden and marked relief from all the symptoms with a prompt subsidence of a bulging fontanel there can be no question about easing of the intracranial pressure. In some punctures there are just a few drops of blood which trickle from the needle; this result should always be questioned.

It is the belief of the writer that cisterna

puncture is a valuable procedure in the diagnosis and treatment of intracranial hemorrhage in the new-born. Lumbar puncture should first be performed, and if it is not possible to remove sufficient fluid to cause a marked reduction in intracranial pressure, cisterna puncture should be resorted to.

Accidents Incident to the Injection of Insulin.

MURRIAC *(Journal de Médecine de Bordeaux,* No. 15, 1925) notes that the syndrome of hypoglycemia is rarely observed in clinical experience, because of the care taken in the administration of insulin. He refers, however, to a few cases, and reports one. He notes that often there are signs of disturbance of the nervous system, a sense of hunger, restlessness; the patient sweats, trembles, pales, the face becomes congested. He quotes cases in point. Such symptoms, however, if they be due to hypoglycemia, appear several days after the injection.

Shock has been observed following insulin injections. This may take the form of a nitritoid crisis or, according to the degree, may appear as a simple urticaria, which may develop in one-half hour after the injection. Local edemas have been reported.

Raynaud and La Croix report the case of a woman who, after her injection of insulin, experienced a feeling of pronounced depression, suffered from headache, diuresis, rapid breathing, and a sense of constriction in her chest, coughed incessantly, and exhibited a swollen tongue and face.

There are local sequelæ, in the form of infection, sometimes developing many days after the injection, one case ending fatally.

As to the reasons for these unfortunate reactions, the author concludes they may be attributable to impurities of the insulin; they may be incident to hypersensitiveness to the protein injected; or they may be, especially in susceptible persons, a reaction to the insulin itself.

Difficulties in the Diagnosis of Cerebellar Abscess.

STEVENSON *(British Medical Journal,* Aug. 15, 1925) quotes Fraser to the effect that in only four out of eight cases of cerebellar abscess was the diagnosis certain.

Intracranial abscesses are almost always the result of chronic, rather than of acute, suppuration of the middle ear, and cerebral are much more common than cerebellar abscesses. Neumann found, in a total of 532, that 336 were cerebral and 196 cerebellar abscesses; and Hunter Tod, in a collection of 100 cases, found that in adults cerebral abscess occurred in 65 per cent of cases and cerebellar in 35 per cent.

The onset of an intracranial abscess is gradual, and as the symptoms arise during the course of chronic suppuration of the middle ear, the patient is not usually seen at an early stage by the otologist. The chief symptoms, which are due to intracranial pressure, are headache (usually dull and not, as in meningitis, excruciating), insomnia, a subnormal temperature, a slow, bounding pulse, vomiting, and optic neuritis. It is usually taught that a subnormal temperature and a slow pulse are typical of intracranial abscess; but in intracranial abscess secondary to middle-ear suppuration, a rise of temperature often occurs, and the pulse rate may not be slowed. Again, while the presence of optic neuritis may be evidence of increased intracranial pressure, its absence does not negative intracranial abscess. It is said that in cerebellar abscess the vomiting and the optic neuritis are more marked than in cerebral abscess, but, on the other hand, both of these symptoms may be absent. Headache is usually stated to be more severe, persistent, and localized in cerebellar than in cerebral abscess, but mental dulness is much less marked. A staggering gait, vertigo (which seems to be quite independent of the ataxia), and nystagmus, are all symptoms which are usually considered to point definitely to cerebellar abscess, but they may also be symptoms of labyrinthitis. In the latter, however, the ataxia and the

nystagmus tend to subside, while in cerebellar abscess they are inclined to become more marked; deafness, moreover, is usually absolute in labyrinthine inflammation, but the hearing may not be affected in cerebellar disease.

Sometimes in cerebellar abscess there are no disturbances of equilibrium, and nystagmus is often absent; but, on the other hand, it would hardly be wise to make a definite diagnosis of cerebellar abscess in the continuous absence of nystagmus. Bárány has shown that in a cerebellar lesion the patient past-points outward with the arm on the affected side, and after vestibular irritation (induced by irrigating the ear of the opposite side with cold water) the pointing deviation of the same arm continues toward the same side, whereas in a normal person the past-pointing of both arms which results is toward the opposite side. Unfortunately these changes in pointing accuracy are not constantly present in cerebellar abscess, and their absence does not exclude it.

Epidermophytosis.

WHITE and GREENWOOD *(Illinois Medical Journal,* October, 1925) have contributed this paper that they may make known to the medical profession as a whole what dermatologists have learned during the last five years about an infectious disease which has grown in this interval from relative nothingness into one of our most prevalent affections.

After an extensive bibliography in which it is noted that the disease has been characterized by various authors as epidermophyton, trichophyton, and yeast infections, the authors describe this disease as a multiform infection of the skin and nails due, evidently, to various types of the ringworm plant. Seemingly, in the long run, it spares no portion of the human body save the hair.

They incriminate as carriers animal products such as leather and wool, and name as means of transmission, bathing suits, jockey straps, handles of golf clubs, gloves, woolen socks, woolen tights, leather shoes worn without stockings, trusses, baseballs, athletic underclothes which have been hung up hot and wet after use in a dark, confined space and subsequently worn once or many times without being cleansed. A wet sponge used in bowling seemed to have been the cause of infection in one patient.

Two probable etiological conclusions stand out preëminently: first, man does not give this disease to his neighbor directly; and second, the bulk of mankind, in New England at least, seems relatively immune to its attack. In only 4.5 per cent of these infections was a second example found in the patient's family or immediate entourage. The only exception to this second conclusion occurred in a boarding school of 175 boys, where six individuals who used the same shower-bath became infected about the feet. As a second known instance there is on record the infection of twenty-three members of a golf club whose feet became involved after using the club's shower-bath.

One of the authors records having seen since 1910 over 800 cases, some of which had persisted for more than ten years; in one instance as long as thirty years. The lesions were observed most frequently on the fingers, palms, and toes. They appeared in the form of vesicles, scales, macules, or papules. Macerated, fissured, papular, callous, keratotic, lichenified, purpuric and epidermophytide manifestations are mentioned. The skin manifestation, which the authors term epidermophytosis, may appear as macules, but more often as large sheets of well-defined pink, delicate, scaling erythema, particularly on the lateral chest wall, on the abdomen, chest, thighs, and legs. The fungus cannot be found in these lesions, but exists elsewhere in the body.

Some few cases show a surprising inclination to disappear rapidly, but most of these infections yield slowly to our best therapeutic efforts.

All infected areas should be covered and kept covered by sterilized garments, the hands within loose cotton gloves, the feet within cotton socks, the body within cotton underclothes. These should be worn day

and night and replaced by similar boiled clothes every twenty-four hours. Silk and wool and leather should never be allowed to touch the infected skin. Patients should never stand upon a shower-bath floor without socks upon their feet. Sponges, cakes of soap and towels should be replaced by sterilized gauze, liquid soap, and paper towels.

Water is always irritating to a skin infected with epidermophytosis. We have no specific internal or external drug. According to Dr. Graves of St. Louis, dust the freshly drained vesicle with aristol and apply with a glass rod the following: ether 2; balsam of Peru 4; flexible collodion 32. In addition to any of these methods the authors have found extremely serviceable a hot sandy beach on which the patient should walk barefooted for an hour or more a day, taking pains to crunch the feet deep into the sand at every step. Hands should be pushed into the hot sand but care should be taken to move to fresh areas on the beach every few minutes.

Calluses, keratoses and infected nails should be macerated in potash, neutralized with fats, and then scraped with a dull knife day after day.

Lichenifications and hyperidrosis can be decidedly benefited by *x*-rays. Despite any or all of these various therapeutic attacks the average infection of epidermophytosis will defy us for months. Time, patience and fidelity, however, will sooner or later triumph.

Sinusitis.

TRIBLE (*Virginia Medical Monthly*, October, 1925) observes that the subjective symptoms cannot be relied upon to establish a diagnosis, but taken in conjunction with the local findings, transillumination, and *x*-ray, offer a deal of help, for the one great complaint of almost universal prevalence at some time or another in sinusitis is headache. Headache may or may not be definite in its location. Skillern has given certain areas as being relatively characteristic; over the brow, indicative of maxillary or frontal suppuration; frontal headache, frontal sinusitis of a chronic type; vertex pain, from the sphenoid and ethmoid; pain in the occiput, from the sphenoid. In this relation it is interesting to note that with the use of the suction apparatus, and the production of a negative nasal pressure, there is more often a complaint of occipital pain than of any other. Next in frequency is pain above and behind the eye.

Sinus headaches, in general, are distinguished from those of ocular origin, due to refractive errors, by their independence of eye use; by their tendency to be worse in the morning and gradually wear off during the day.

Change of position, such as bending forward, aggravates a sinus headache. Ewing's sign, pain on making pressure over the site of the insertion of the superior oblique, is a diagnostic point, and indicates an inflammation of the frontal sinus. It is caused by an extension to the periosteum at the insertion of the pulley.

Pressure on the optic nerve and impairment of the circulation in its passage along the side of the sphenoid or post-ethmoid as a result of inflammatory exudate, disturbance of ocular motility and displacement of the globe, can all result from sinus disease.

Suppurative sinusitis, acute, offering relatively no difficulty in diagnosis, may be almost fulminating in its course. It depends for severity upon the infective organism. Pus is foul in infections of dental origin. The speculum and head-light show free pus.

Chronic suppurative sinusitis is a sign that both nature's and man's efforts have failed. Drainage has not taken place freely enough, changes have occurred in the mucosa and the bone. Surgical treatment is generally needful.

The hyperplastic type of sinusitis is associated with a hyperplastic rhinitis. Polypoid degeneration is frequent. Grossly, there is a choking of the upper nares, from the middle turbinate upward. The high-power arc lamp and the use of the nasopharyngoscope are here essential, and a Wappler invention with a straight trocar and cannula enables an intra-antral inspection as well.

Hyperplastic inflammatory changes account for failure to relieve symptoms by surgical intervention in the posterior, ethmoid and sphenoid sinuses. Small areas of edematous tissue cause nerve disturbance which does not stop when the sphenopalatine ganglion is cocainized, for the pain arises in the sphenoid and the ganglion is peripheral to the seat of the pain.

Resection of the middle turbinate and opening and draining the sphenoid and posterior ethmoids are frequently resorted to. General systemic treatment is always necessary, and the possibility of an anaphylaxis is not to be overlooked, as a contributory factor. The usual local medicinal measures, cleansing solutions of an alkaline non-irritating character, pressure massage of the inferior turbinates, packing and occasional linear cauterization of the inferior turbinates, or a shearing away of the redundant tissue of the lower border, are all, at times, indicated.

Malignant diseases of the sinuses are relatively rare; probably the most commonly found is involvement of the antrum, arising from an irritative focus around an infected tooth socket. There is often a persistent dental neuralgia, sometimes a first and always a most distressing symptom, and one which has led to grave errors in diagnosis until irreparable damage has been done. The treatment is that of malignancy elsewhere, modified by the anatomical relationships peculiar to the region involved.

A mild preventive treatment should be taught all patients with upper respiratory affections, and a first great point is avoiding the unnecessary blowing of the nose, particularly when both nostrils are held. It is rather pathetic to see the young mother's pride in her offspring's vigorous nose-blowing. It is simply spreading infection to the sinuses and ears. The next matter of importance is the question of douching and insufflation from the hand as carried out by the average patient. Does it do good or harm? Probably harm. It can do but little possible good. The next point is the great desirability of the surgical removal of all obstructions, and making an attempt to equalize the ventilation of the nasal chambers.

Coöperation with the dental profession in advising the regular inspection and prophylactic treatment of the teeth and surgical removal of those showing apical absorption in the contiguous antral area will cut down the number of antrum infections of dental origin.

Pituitary Disorder.

FRAZIER and GRANT (*Journal of the American Medical Association*, Oct. 10, 1925) report 100 cases. Glandular therapy they regard as barren of results, though they believe the patient should be given the benefit of the doubt, and if vision be not threatened a course of treatment with the glandular extracts is desirable. With the roentgenologist and the ophthalmologist for consultants one can rest assured that information will be available as to whether the lesion is progressing, stationary, or in process of retrogression. Because the pathologic condition in pituitary lesions is fairly constant, the majority being adenomas, and because the location of the lesion can be determined with great precision, the roentgenologist is supplied with information of great value in determining dosage and other technical details.

In the series of cases studied there were only three in which the lesions were favorably affected by radiation.

When surgery is to be considered, three leading questions suggest themselves:

1. When does the case of pituitary disorder become a surgical problem?

2. What may be accomplished by operative procedures?

3. What are the immediate and end results?

The authors conclude their paper as follows:

The surgery of the pituitary body, as practiced to-day, has limitations, proportionate in large measure to the duration of the lesion. When surgery is recognized

as an essential factor in the treatment of the pituitary lesion in the early stage, before optic atrophy is advanced and before the terminal stages of functional loss are reached, there will be a decided improvement in the operative results and a lower mortality. The surgeon has been handicapped because he has been confronted so often with terminal effects.

Treatment of Placenta Prævia by Continuous Weight Traction.

WILLETT *(Proceedings of the Royal Society of Medicine,* October, 1925) reports on seven cases. He notes that the treatment of placenta prævia consists in applying sufficient pressure on the lower uterine segment to control hemorrhage.

The methods commonly employed are either podalic version and the bringing down of a leg, or the introduction and inflation of de Ribes' bag. Both are equally effective as compressors, but there are certain disadvantages in their use. Collectively, both require a dilatation of the os, equivalent to two fingers, for their easy performance. Individually, version, whether external or bipolar, is not always a simple maneuver.

Many maternal deaths from shock and collapse after delivery of the fetus are caused by rupture of the lower uterine segment from uncalled-for interference.

De Ribes' bag is not always at hand when wanted; its sterilization, often incomplete, takes time; if the bag is old it is apt to leak after inflation and become a source of danger; and lastly, there may be a highly critical minute or two between the expulsion of the bag into the vagina and the descent of the dislodged presenting part into the os.

The other methods are in less common use—plugging the vagina before the os is sufficiently dilated for more active treatment, and rupture of the membranes in mild cases of lateral placenta prævia. Both are useful, especially the latter, in appropriate conditions.

Willett holds that if the requisite pressure be exerted by the forthcoming head the disadvantage of version and de Ribes' bag might be obviated with the possible advantages of earlier treatment, less interference, and so diminished risk of sepsis.

He advises a satisfactory tractor forceps, one which can sustain a three-pound weight continuously when fixed to the scalp of the fetus. The ordinary type of sharp teeth volsellum failed in this respect. The forceps he uses is of the T-shaped clip type, the holding bars being half an inch long, narrow enough to pass where a finger will, and rigid enough to sustain the requisite weight when fixed in the fetal scalp. The holding teeth are rounded.

The application of the forceps is easy, and they can be applied to the scalp as soon as the os will admit a finger, thus insuring early treatment. Preferably, an anesthetic is given; the membranes are ruptured with the forceps which, with the blades closed, are passed through the os until the head is reached. The blades then are separated, and pressing on the scalp, closed, when a grip on the scalp will be obtained. The grip is superficial and never bulges below the bars of the forceps and depends somewhat on the amount of dilatation present. A weight varying from 1 lb. to 2 lbs., hanging over the end of the bed, is applied to the handles by a tape. Nothing further is done until the head is in the vagina, when the forceps are removed and the patient is allowed to deliver herself without further interference. The scalp stretches rapidly at first, and the forceps descend rather quickly, giving the impression that the head is descending as well, so care should be taken not to remove the forceps too soon.

In every case the placenta was felt on ordinary vaginal examination, either marginal or lateral, and this may be taken as an instance requiring active treatment. In no case was the placenta central. In every instance the mother's general condition was noted as good or fairly good. The only adjuvants to delivery were pituitrin when necessary, and a tight binder; in no case were the obstetric forceps used.

One patient died from postpartum hemorrhage due to a morbidly adherent placenta. Three children died, one a premature infant weighing 3 lbs. 12 ozs., one a dead macerated fetus, and one a fetus which perished during delivery. The duration of traction varied from forty minutes to fifty-three hours, at which time the forceps pulled off. The average for the seven cases was twelve hours.

The puerperium was afebrile in five cases, and febrile to a slight degree in two cases. In neither instance was the sepsis severe.

Damage to the scalp varied with the duration of traction. Five to six hours traction produced very little damage and the puncture wounds healed kindly. After prolonged traction the stretching of the scalp may cause the formation of a hematoma. Where the forceps tore off, the resultant ulcer healed in about a month.

In cases in which this method was used it was easy and quick of application and always checked the bleeding immediately and completely. For these reasons the method seems suitable for use in private practice.

New Observations on Syphilis.

An editorial in the *American Journal of Public Health* for October, 1925, notes that the llama has been found to be a carrier of syphilis. The treponema found in this animal is said to be identical with that found in man, and female llamas have been successfully infected from human lesions. On the other side, an accidental infection of a laboratory worker has proved that the treponema found in the llama is virulent for man.

Since syphilis has been endemic in Peru for many centuries, the interesting question comes up as to whether man or the llama was the original carrier of the infection. While the disease in the llama is entirely analogous to that in the human, the course is shorter and the tertiary period occurs in from two to three years after the original infection.

The point of special interest is the statement that a curative serum has been produced for the llama. After ten to fifteen inoculations with an attenuated culture, the llama produces an antiserum which is curative for these animals. The experiments which have been carried out in Buenos Aires seem to have been well checked, animals cured by the serum have lived from three to ten years, while the controls have all died from general paralysis in less than three years. The young of treated animals have been entirely free from the disease. The use of the serum in man has been entirely and rapidly favorable, surpassing the older therapeutic methods in efficacy. Whether the cure will be permanent in man remains to be seen. The Pasteur Institute of Paris is at present obtaining llamas for extension of these interesting experiments.

Newer Methods of Determining the Employers' Liability in Eye Injuries.

SHUMAN *(Atlantic Medical Journal,* October, 1925) points out that when a specialist tells a man he has 20/40 vision, this man at once concludes that his seeing power is reduced one-half. He notes that the Chapman table of percentage expression of visual acuity is both mathematically sound and intelligible. In this table 20/20 indicates 100% vision, 20/40 90%, 20/80 70%, 20/100 60%, 20/120 50%, 20/140 40%, 20/160 30%, 20/180 20%, 20/200 10%, 20/220 entire loss of vision.

Justice Keller has given a decision to the effect that an injured eye in which, after removal of the cataract, normal vision may be secured with a glass is not loss from an industrial standpoint.

One of the latest achievements in ophthalmology, microscopic examination of the living eye, is a method which will soon play a very important part in determining the employer's liability in eye injuries. By means of the perfected binocular microscope, and illumination with the so-called slit-lamp, which furnishes an intense beam of light to

penetrate to the deeper structures of the eyeball, stereoscopic or tridimensional vision is obtained, which not only magnifies lesions for more accurate diagnosis than has heretofore been possible by other instruments of precision that can be used on the living organ, but which will settle the precise depth and localization of these lesions with absolute certainty. The best possible protection that an employer can give, both to himself and to his employee, is a careful record of their visual acuity at the time of employment. Just as it has been found that it is cheaper to prevent accidents than to pay for them, so, when it it fully realized to what extent poor eyes not only interfere with efficiency, but also to what extent they increase the frequency and severity of industrial accidents, to say nothing of the possibility of unjust claims in compensation cases, the employer will find it a paying investment to be sure of the condition of the eyes of each and every one of his employees at all times, by whatever means, and at whatever expense may be necessary to determine it.

Influence of Male-sex Glands on Female.

KOVACS *(American Journal of Obstetrics and Gynecology,* October, 1925) calls attention to the fact that transplantation experiments resulting in the successful masculinization of very young, undeveloped females, and the feminization of males, respectively, make very plausible the supposition of Steinach and Tandler, to the effect that the fertilized egg in the earliest stage of its development has not yet a sex character. Only when the sex glands appear does the embryo begin to develop, under the influence of these glands, along the line of the male or female sex. According to Sellheim, single ovum twins have always the same sex, because even in cases in which the twins have a developing basis of different sexes, the sex gland of one of the twins overwhelms that of the other one through the communicating blood circulation. Thus, if the germ gland of the male predominates, it changes the sex character of the other embryo into the male line, and *vice versa.*

The author conducted experiments to determine whether or not he could influence the sex ratio of descendants by introducing fresh testis tissue (and thus its hormones) continuously parenterally into the female, before, during and after mating. As a result of experiments which are recorded and illustrated he concludes that the sex ratio of the offspring of the albino rat can be changed to the advantage of the male by subcutaneous injections with testis tissue.

This change of the sex ratio can be increased in this direction if the treatment begins eight days before mating.

The greatest influence on the sex ratio is obtained by transplantation of testis into the female rat, before mating.

The subcutaneous injections of testis tissue of the same species into the female rat effects a temporary sterility for a period of three to eleven weeks.

Steinach's dogma concerning the antagonism of the gonads is incorrect. A successful transplantation of testis into adult female rats can be obtained without first removing the ovaries. Such females can become pregnant, give birth to young, and raise their litters normally.

The functioning testis tissue transplanted into the female has neither a significant influence on the biologic function, nor does it change the morphologic structure of the ovaries.

The Relation of Psychotic and Neurotic Disturbances to Head Injuries.

HALL *(Illinois Medical Journal,* October, 1925) observes that it is a widely held opinion, especially among the laity, that severe injuries to the head are directly causative of mental defects, and that where psychoses develop in a person previously apparently normal with the history of a head injury, the two circumstances are almost invariably connected. While a study of the literature gives a certain amount of support to this

view, it seems, however, rather probable that the part played by cranial trauma in originating organic and functional neuroses and psychoses is greatly exaggerated. Generally speaking, when such conditions appear and persist after a trauma, there existed a pretraumatic degenerative or other predisposing condition, the traumatism merely acting as an excitant or intensifier of this condition.

Statistics do not support the view that trauma often directly causes definite psychoses. Harrington found from statistics reported by several authors that the proportion of mental diseases ascribed to head injuries was comparatively small, and in a series of 5429 cases which he investigated only 17 were diagnosed as psychoses due to head injury.

From the point of view of whether a craniocerebral traumatism can be causative directly of a psychosis where none previously existed, it seems fairly reasonable to conclude from the literature that although there is no clinical entity which may definitely be termed a traumatic psychosis, yet there has been repeatedly found, following brain injury, a detrimental alteration in the personality of the patient, and which might be termed a traumatic-psychotic constitution, as Roeper calls it. When it exists, and it may exist after an apparently trivial craniocerebral injury, there may be a serious loss in the economic value of the patient which ought to be taken into account in determining compensation.

Massive Excision of Subcutaneous Abdominal Fat.

HEINECK *(Western Medical Times,* October, 1925) believes that the profession is not sufficiently acquainted with the benefits, cosmetic and physical, that can be secured by the operative removal of large masses of subcutaneous abdominal fat. Fatty pendulous abdominal walls have been looked upon as natural, as irremediable, and therefore have received but very little study. It has, however, been repeatedly and amply demonstrated that superfluous masses of subcutaneous abdominal fat can, with advantage to the patient, be removed by operation.

Seventy-seven cases of operation have been culled from literature, to which the author adds eleven of his own.

The benefits secured from massive resection of superfluous subcutaneous abdominal fat are so evident, so manifest, and the dangers attending the operation are so negligible, that even in the absence of any other pathological process calling for an abdominal operation, the surgeon should not hesitate to advise and to urge the excision of these useless, troublesome and cumbersome fat accumulations.

The risks of simple lipectomy, either performed alone or in conjunction with other operative procedures, are far outweighed by its beneficent results. In the eighty-eight cases furnishing the subject-matter of this paper, only two deaths are recorded. One patient, operated upon for umbilical hernia and pendulous abdomen, died from embolism. MacLean's patient, operated on for pendulous abdomen and incisional hernia, died from peritonitis on the fifth postoperative day.

The removal of one large wedge-shaped fat-block, occasionally two, rarely three, usually suffices. As the patient lies in the recumbent position, the fatty mass gravitates to the sides and can be lifted up as a great ridge or fold lying across the abdomen. The operator, grasping this mass in the center pulls it up and away from the body and circumscribes it by two incisions, one passing a little above and the other a little below the lines of deflection.

Fat is a tissue of low vitality, and special care must be taken that there be little or no accumulation of serous or sero-sanguineous fluid between or beneath the flaps. Retained wound secretions retard healing, invite infection. A drain is inserted at either end of the wound; if the wound be long, a drain may also be inserted at its center. The pendulous appearance is entirely removed and is replaced by a simple large pronounced ridge. Some patients during the first few postoperative days complain of abdominal constriction. This calls for no special treatment.

Reviews

Modern Medicine. Its Theory and Practice. Edited by Sir William Osler; reëdited by Thomas McCrae, M.D., assisted by Elmer H. Funk, M.D. Volume II. Lea & Febiger, Philadelphia, 1926. Price $9.

Not long since we noticed the appearance of Volume I of the third edition of this very noteworthy contribution to medical literature. The present volume deals with Diseases of Doubtful Etiology, those caused by Protozoa, Spirochætes and Animal Parasites, Diseases due to Physical, Chemical and Organic Agents, and Deficiency Diseases. Manifestly from this list of subjects this volume may be considered as one of the most important of the series, particularly as our knowledge of the etiology of certain common diseases has greatly advanced within the last few years, and this has required a new classification in standard books on the practice of medicine. Thus, scarlet fever is not to be found in this volume, although measles and the so-called "fourth disease" are included.

Manifestly it is impossible to adequately review each contribution made to a work of this size. Only one or two points can be discussed.

Dr. Alexander Lambert contributes the article on the abuse of Alcohol, Opium, Codeine, Heroin, Morphine and Cocaine. It is interesting to note that he makes a differentiation between the habitual use of opium and the habitual use of morphine. Certain passages in Dr. Lambert's article are of more than ordinary interest, the more so as he is well known because of his attitude in regard to these so-called narcotic drugs. He states that the physical desire or craving for alcohol is not inherited, but that it is an unstable personality which renders an individual more liable to go to excess and less able to resist the strain of life, and these conditions are inherited. This is a very important statement when carefully thought out since it shows that the alcoholic has a nervous system which is primarily at fault and that the alcohol is not the underlying factor in his tendencies. A sentence which occurs earlier in the article, however, seems to rather conflict with the statements that we have just quoted. In this paragraph Dr. Lambert says that "formerly we believed that a weak will and unstable nervous system was the foundation on which chronic alcoholism was based. Now we realize that the will is the conscious psychic energy of the personality and that the direction of its expression is controlled by the instincts and emotions or intelligence, and only expresses the strength of the resulting determination with which the personality seeks relief from unbearable emotions." We confess that we are somewhat confused by this series of words. Perhaps it does not contradict, as we think, the paragraph already quoted.

In the treatment of chronic alcoholism, Dr. Lambert advocates the plan which has largely gone under his name. He also recommends 1/10 grain of apomorphine if the patient is pugnacious, and states that such a dose rarely causes vomiting unless the stomach is full. We have found that 1/30 or 1/20 gr., if the patient is not pugnacious but only excessively nervous, is entirely adequate.

Dr. Lambert is also known as one of those who was most active in the campaign which resulted in the legislation which prevents the importation and manufacture of heroin in the United States. He states that this drug is a most competent habit producer, but he also definitely asserts that while this may be true in regard to those with an unstable nervous system, it is also true that heroin may be a most valuable drug.

The whole question of the true value of heroin is as to whether the multitude of worth-while individuals should have been deprived of a valuable medicine to protect a relatively few persons that society would be well rid of, for Dr. Lambert tells us that its intense narcotization of the emotional centers of the brain, destroying the sense of emotional value, is extraordinary, and more rapid than that of morphine, that it benumbs

pain, and it is said that in patients dying of malignant disease it quiets unbearable pain with less stupefaction of the mentality than morphine produces, and he adds "it is highly recommended to allay cough, but in pneumonia it is not without danger as a respiratory paralyzer." This sentence emphasizes what we have just said in the preceding lines, to-wit, that if heroin quiets unbearable pains in malignant disease better than does morphine, the profession should not have been deprived of it, and the statement that it is a "respiratory paralyzer" is, we believe, incorrect, if by that term it is meant that it is more depressant than opium or morphine. It is stated by competent investigators that in ordinary doses it is rather a stimulant to respiration than a sedative. It may be true that heroin slows the respiration, but to compensate for this it increases its depth, and Cushny thinks that its power lies between morphine and codeine so far as the respiratory center is concerned.

The difficulty in the past with so-called "Systems" has been that there was so great a delay in the appearance of each volume that the early ones were stale when the later ones appeared. The prompt appearance of this particular "System" shows that the editor and the publisher are keenly alive to this fault and are avoiding it.

ULTRA-VIOLET RAYS IN THE TREATMENT OF INCURABLE DISEASE. By Percy Hall, M.R.C.S., L.R.C.P. C. V. Mosby Company, St. Louis, 1924. Price $3.75.

Although this book was published in 1924 according to the title page, it has just appeared upon American book-shelves. It begins with an introduction to the American edition by Dr. Edwin C. Ernst of St. Louis, which precedes introductions by Sir Henry Gauvain of London, and Dr. Leonard E. Hill, who is Director of Applied Physiology and Hygiene in the National Institute of Medical Research, London. By means of these introductions a definite and clear statement of what is meant by ultra-violet rays is obtainable. In his preface the author tells us that so much erroneous information has been given in medical and lay periodicals in regard to the curative effects of the ultra-violet rays, and as to what they consist in, that he has felt it necessary to present the subject as he believes it to be up to date and yet in doing so to avoid redundancy. As a matter of fact he uses the words ultra-violet rays not in the limited sense that they may be obtained by artificial means, but as they exist in sunlight and consequently are the factors in heliotherapy. He gives the various sources of ultra-violet light, discusses the Tungsten arc lamp and the technique of its use, then proceeds in his ninth chapter to deal with the use of radiation of this type in skin diseases, and in subsequent chapters to the use of these rays in rheumatic disorders, neurasthenia, and conditions of disease in the respiratory tract. In his thirteenth chapter he deals with ultra-violet rays in various conditions of more or less importance. There is also an appendix in which are discussed various types of apparatus. A very considerable number of illustrations of apparatus or methods are found throughout the text.

It is, of course, to be distinctly understood that the ultra-violet rays discussed in this book are not those which are commonly developed by the apparatus sold by various public utility companies in much the same way that they sell incandescent lamps, but rather with what may be called true ultra-violet rays, which, of course, possess very extraordinary powers.

Even if our readers do not intend to apply these rays to therapeutic purposes, this book will prove useful to them, because it will give them an idea of the scope of their therapeutic application.

THE EARLY DIAGNOSIS OF THE ACUTE ABDOMEN. By Zachary Cope, B.A., M.D., M.S. Lond., F.R.C.S. Eng. Third Edition. Humphrey Milford. Oxford University Press, London, New York, Bombay, Edinburgh, Toronto, Calcutta, Glasgow, Melbourne, Madras, Copenhagen, Cape Town, Shanghai, 1925. Price $3.80.

A book of this kind, for which a third edition is called, must necessarily have made its strong appeal to the medical profession. This book was put forth with the feeling that early diagnosis of the underlying condition of the acute abdomen was rarely made, that it was the custom of the

profession at large to wait for pulse hurry and rigid abdomen before considering surgical measures. A number of diagnostic points have been introduced to which insufficient attention has been paid: for instance, the localization and value of shoulder pain, the obturator test and the test for differentiating between pain of thoracic and abdominal origin.

As for treatment, with few exceptions operation by a competent surgeon at the earliest possible moment is the one that is advised.

The first chapter is devoted to the principles of diagnosis in acute abdominal disease. Thereafter follow discussions on methods of diagnosis, appendicitis, perforating ulcer, acute obstruction, intussusception, cancer, volvulus, strangulation, acute abdominal symptoms in pregnancy and the puerperium, ectopic gestation, cholecystitis, and colics. There are chapters devoted to the early diagnosis of abdominal injuries, the acute abdomen in the tropics, acute abdominal disease with genito-urinary symptoms, spreading and general peritonitis, pneumococcal peritonitis, and, finally, one on diseases which may simulate the acute abdomen.

As perhaps a fundamental principle in diagnosis the author states that the majority of severe abdominal pains which ensue in patients who have been previously fairly well and which last as long as six hours are caused by conditions needing surgical intervention. He notes that in the Registrar-General's report for England and Wales in 1921 there were about 7000 deaths from intra-abdominal conditions which, if diagnosed early and properly treated, would probably have been prevented. It is noted that pain in the shoulder may be the only sign which an inarticulate liver abscess threatening to penetrate the diaphragm may be able to produce. It is held that severe colic always indicates obstruction causing distention or violent peristalsis. The pain of biliary colic is often referred to the right subscapular region, whilst that of renal colic is felt in the loin and radiates to the corresponding testicle.

The book has many useful suggestions for both surgeon and practitioner. It is sound in its teaching, logical in its conclusions, and is worthy of hearty commendation.

Notes and Queries

X-raying of Teeth: The Latest Craze.

In a letter to the Editor of the *Lancet* of October 31, 1925, May writes: "Have any of your readers, whose patients' teeth have been *x*-rayed, ever received a report that there was nothing amiss with the teeth? Judging by my experience, every one whose apparently sound teeth are *x*-rayed is said to have diseased ones. Two of my patients recently went to an oculist. He had their teeth *x*-rayed. A patient went to an aurist and one to a laryngologist; they had their teeth *x*-rayed also. The verdict in each case was that several teeth ought to be extracted. All these patients had more or less recently seen their dentists, who had found nothing wrong with their teeth. One can only wonder how any of the lower classes can see or hear or smell! This tooth-extracting mania seemed to be a good deal on the wane, chiefly because doctors with the largest experience of 'rheumatic' conditions thought it had been greatly abused. But since this *x*-raying of teeth came into fashion the madness is worse than ever. I am informed that continental medical men do not attribute anything like the same importance to the condition of the teeth as we do, and think we have gone crazy on the subject. I am disposed to agree with them."

In an Editorial note attention is called to a review of a very important book by Price, of Cleveland, Ohio, which deals exhaustively with the fallacy of judging the degree of dental infection simply from study of a radiogram. The existence of apical rarefaction is not enough to condemn a tooth, and he refutes the assumption prevalent in America that these rarefied areas denote a menace to general health proportional to the degree of bony absorption.